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THE TREATMENT OF ECZEMA WITH SPECIAL REFERENCE TO THE USE OF VACCINE AND THE PART PLAYED BY BACTERIA IN ITS ETIOLOGY. REPORT OF FIFTY CASES.

By Leon S. Medalia, M.D., Boston.

INTRODUCTION.

This paper is based upon a study of about 50 cases of most protracted types of eczema. Practically all of these cases failed to respond to the ordinary methods of treatment, and applied for vaccine treatment as a last resort. The majority of these (46 cases) have been treated by me in private practice. Only a few (5 cases) have been followed up at my clinic at the Mt. Sinai Hospital. All but fourteen of these cases have been treated with autogenous vaccines.

While it is true that those cases treated in private practice have had the benefit of general treatment, such as dietetic, hygienic and the use of powders and ointments to alleviate the local condition alongside of the vaccine treatment, the cases at the out-patient clinic, on the other hand, received practically no other treatment but vaccines. The results obtained in this latter group of cases, in my opinion, are marked contributory evidence of the value of vaccines in this disease.

Only a few illustrative cases, the bacteriological findings, and the results obtained, will be cited in the body of this paper. The detailed records of all the cases will be found at the end of the paper so that every one interested can draw his own conclusions.

ETIOLOGY.

I shall not enter upon a discussion of the various theories and opinions presented by different men from time to time upon the etiology of eczema. The principal thing I am interested in is the part played by bacteria in this disease as far as I could ascertain from my own work and from a careful study of the literature, both clinical and bacteriological.

The particular point in the etiology that I will ~~try to make~~ clear is that which Stelwagen[1] in his latest text-book on diseases of the skin considers the "unknown quantity" of eczema. He says, "It is a well known fact that certain external irritants will provoke a dermatitis in a large number of those exposed; whereas in most of these it will be simply a passing dermatitis; in others—usually a small minority—it turns out to be a true persistent eczema which has been provoked; what this necessary something is which is present in such individuals and not in others, and not constantly present in many of these, is the unknown quantity in eczema of which we are still ignorant."

What this "unknown quantity" is, ("this necessary something") suggested itself to me by the bacteriological findings of eczema and by the results obtained in this disease with the bacterial vaccines. Briefly, I believe this "unknown quantity" to be:—

1. The presence on the surface of the skin,

at the time that the dermatitis occurs, of an organism capable of causing a secondary infection;

2. The bacterial infection of the dermatitis by scratching, and
3. The lowered resistance of the individual and the lack of immune substances or antibodies in his blood to resist this secondary infection by the particular invading organism at the time when the dermatitis occurs.

The original dermatitis may be caused by chemical irritants in the individual's occupation as shown by Knowles,*[2] or by poisoning with various food substances, or by mental and nervous disturbances, principally anxiety.

The particular organism which I believe causes the continuance of the dermatitis changing it into an eczema, that "unknown quantity" in the etiology, I found culturally to be usually a staphylococcus aureus, sometimes mixed with streptococcus and rarely mixed with staphylococcus albus. Although the raising of the resistance by vaccine had not in some cases prevented a recurrence of the dermatitic or primary lesions of eczema, it has prevented it from continuing as an eczema, the dermatitic lesions subsiding, as a rule, in a day or two without going on to the real eczematous condition.

Thus, while the primary cause of eczema may be any of the various etiologic factors capable of producing a dermatitis with or without the formation of vesicles, the real reason for the keeping up of this dermatitis, rendering it what we know as an eczema, is the secondary bacterial invasion. This claim is fairly substantiated, first, by the clinical findings, *i.e.*, the results obtained in this disease by vaccine and the behavior towards the vaccine treatment by those of my cases that have had recurrences, as will be cited later; and, second, by the bacteriological findings, *i.e.* the absence of bacteria in the primary lesions or closed vesicles and the abundant growth obtainable from the later more chronic lesions, crusts or pustules of the true eczema. (Similar bacteriological findings have been reported by Veillon,[3] Kreibich,[4] and a number of other investigators.)

BACTERIOLOGICAL FINDINGS.

Technic. Cultures were obtained in the usual way, using a number of swabs. The material was collected from unopened vesicles and crusts, from pustules and scales. It was then planted on glucose agar, beef blood serum and glucose bouillon. Occasionally, when thought necessary, special media were also used, principally blood agar. A number of cultures were made on glucose agar (usually fifteen to twenty) from which an autogenous vaccine was prepared in the ordinary way. As a rule, there was no difficulty in obtaining an abundant growth for the preparation of the autogenous vaccine within 24 hours, if the cultures were obtained with the proper bacteriological precautions. Whenever a streptococcus was found mixed with the staphylococcus it was necessary to have it isolated in pure culture for the preparation of a separate autogenous vaccine. This, of course, took a longer time (two to four days) than when the staphylococcus alone was found present. When cultures were obtained from freshly formed vesicles, if the surface skin was properly cleansed with alcohol and allowed to dry before opening them and the proper aseptic precautions used in obtaining the material, the cultures were found invariably sterile.

Results. The cultural findings of the fifty-one cases of eczema to be reported were as follows: 34 cases showed staphylococcus P. aureus in pure culture; 2 cases showed staphylococcus P. aureus mixed with staphylococcus albus; 6 cases showed staphylococcus P. aureus mixed with streptococcus; 3 cases were found sterile; 6 cases no cultures taken.

Staphylococcus aureus, according to the above findings, may be said, therefore, to be the organism always present in eczema, while in only six of the forty-two cases (that showed growth) or little less than 2%, showed streptococcus mixed with the staphylococcus aureus.

The presence of streptococcus should always be kept in mind because it can very easily be overlooked on account of the abundant growth of the staphylococcus overgrowing it. The streptococcus, when present, if overgrown by the staphylococcus, can be detected only by the microscopic examination of smears made from the bouillon cultures or from the water of condensation of the solid culture media. It is of special importance not to overlook the streptococcus in connection with vaccine treatment where the results depend so much upon the proper autogenous vaccine.

VACCINE TREATMENT.

Method of Procedure. The cases treated in private practice were all given a thorough physical examination, preceded by a careful history. The urine, feces and blood were also examined. An attempt was made to find out if possible the underlying cause for the primary dermatitis or the beginning of the eczema. Special inquiry was made into the idiosyncrasies of the patient to various food articles in the diet; the effect of anxiety and worry upon the skin and the particular work done by the patient in his occupation or daily life—not being satisfied merely with a general statement of his occupation.

The examinations of the feces revealed the lack of proper mastication when present, the excess of carbohydrate, fat or meat intake, and the presence or absence of chronic constipation. Special attention was paid in the blood examination to the presence of low coagulability and of leukemia or other forms of anemia. The examination of the urine was made, with special reference to high urea or indicanuria and to rule out kidney lesions.

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* From a study of 4142 cases of eczema Knowles claims to have found a quarter of these to be due to external causes definitely. One-sixth of this affection he claims is caused by the occupation of the individual.

Inquiry into the habits and wearing apparel of the patient revealed as a rule the underlying *mechanical* reason for the eczema keeping up in certain places, such as the continuous irritation by clothing (woolen underwear), girdles and other wearing apparel; also the continuous picking at the face and scalp, or picking at the fingers and hands, all which habits had to be warned against and stopped before the patient could be really cured. Cultures were obtained as described under the previous heading, and an autogenous vaccine was prepared. Cases that applied for treatment during an acute exacerbation or those who had been suffering from an acute generalized eczema were advised to enter a private hospital, where they could be kept under close observation. The complete rest in the hospital, both mental and physical, and absence from the home surroundings, I consider an important factor in the good results obtained in such cases.

It was found early in the application of this method of treatment in eczema that autogenous vaccines were necessary and a still more important point was the need to administer what would be considered ordinarily tremendous doses up to 6000 million organisms or over, in one dose. Otherwise there would be no noticeable change in the condition clinically nor would there be much local reaction.

DOSAGE AND METHOD OF ADMINISTRATION.

From a recent article in the *Journal of the American Medical Association* (Greely, Feb. 6, 1915) it would seem that there is still a great need to emphasize the details of vaccine administration. I was astonished to see the attempt made in that article to lay down one set of rules with reference to dosage to be applied to all organisms and all kinds of infections. The fact remains that every kind of infection is a law unto itself, differing with each organism causing the infection as well as with each type of disease produced by the same organism. To say, for instance, that it is rare that "one (dose) smaller than 100 million organisms need be given as a first dose," without qualifying the kind of vaccine, is certainly erroneous. While it is true that in cases of staphylococcus vaccine the initial dose need not be smaller than 100 millions, in cases of pneumococcus, streptococcus, B. Coli, mucosus capsulatus and gonococcus the maximum initial dose should never exceed 25 millions.

Similarly, do we have to consider the different types of lesions. While, for instance, in a case of furunculosis, acne, or eczema the initial dose of staphylococcus vaccine may be 250 million organisms for all of them, in cases of furunculosis no higher subsequent dose than 1000 millions should be given, while in acne or eczema doses as high as 6000 or even 10,000 millions must be given before any marked clinical change for the better is noticed.

As to the temperature being used as a guide to treatment, I can say that I have never found it useful. In the large number of cases I have had in various hospitals, where a morning and evening temperature chart was kept, I have thus far found in the temperature nothing that could be of use as a guide to the dosage or interval in the administration of vaccine. There would be an occasional drop in the morning temperature to 97°, but I could see no definite relation between these drops in temperature to the vaccine administration as indicating a negative phase. Such drops in temperature were noticed where the vaccines were omitted for several weeks, and again in cases where there was no vaccine treatment at all. Neither would the temperature be a practical guide, even if it were of any use in the treatment of ambulatory cases.

Personally I have used, and advised the various physicians by whom I was called in consultation to use, the local reaction as a guide both to dose as well as interval. Thus beginning with the minimum dose (25 million in all bacteria excepting staphylococci. In the latter the initial dose may be as high as 250 million in an average adult), it is gradually increased by 50% of the *initial* dose until the patient shows a local reaction. The inoculation should not be repeated until after the local soreness has subsided. If the local reaction was marked—marked local swelling and soreness of the upper arm, lasting more than 24 hours—the dose following should be decreased rather than increased. No general reaction should ever occur. When it does, it is a sign of an overdose. The intervals are guided by the local reaction in the arm in those vaccines that are prone to cause a local reaction, *e.g.* staphylococci, B. Coli, mucosus capsulatus. The interval may, therefore, be twenty-four to forty-eight hours in the first few injections and later once every five to seven days. Some organisms, *e.g.* gonococcus and pneumococcus, do not produce much of a local reaction, if any. The clinical response has to be depended upon alongside of the local reaction in such cases. The negative phase coincides with a change for the better. The reinoculation should take place when the change for the better begins slightly to wane. As a rule the dose may be repeated every twenty-four hours in acute cases and three to five days or seven days in subacute or chronic cases, always using the alternate arms (fleshy part of upper arm). In the acute cases, principally systemic, or in eye infections, only small doses must be used in order not to obtain much of a negative phase, because a set-back or a marked negative phase here might mean the loss of sight or life. It is particularly in those cases that experience and full knowledge of immunology is absolutely necessary, not only to obtain good results but also not to produce harmful effects. In the subacute and chronic diseases an overdose or a mistake in the interval is, as a rule, from the very nature of the condition, not followed by any serious consequences.

The initial minimum dose may be definitely established. The maximum dose may also to some extent be set down according to the type of organism used and the kind of lesion treated —not to the same definiteness, however, as the minimum dose. The interval and frequency of reinoculation, upon which really depends the success or failure of this method of treatment—that can only be gained, I believe, by considerable experience. The best the general practitioner can do is to take a culture and have an autogenous vaccine prepared in a reliable laboratory, preferably by a man who makes a specialty of this mode of treatment rather than by one who knows the laboratory end of it only. The value of this procedure to the practitioner is threefold. First, he has a bacteriological diagnosis of the infection. Second, he can keep in touch with the man of experience during the progress of the treatment, consulting with him whenever necessary, thus giving the patient the benefit of the best procedure. And, third, he has a vaccine prepared from the organisms responsible for the infection. The expense of the autogenous vaccine, which can be prepared in the majority of cases within twenty-four hours, need not be any more, if as much, as the stock vaccine, and from the standpoint of results it certainly is the vaccine of choice.

The foregoing are really nothing more than general suggestions. Each case is a law unto itself, and considerable experience is necessary to accomplish the desired results with this method of treatment.

The details of the application of the vaccine in the disease under discussion—eczema—will be found in the illustrative cases following:—

ILLUSTRATIVE CASES.

The following cases are cited to illustrate the actual mode of application of vaccines in this disease—method of procedure, doses given, interval used, and results obtained.

Case 33. M. S., female, 32 years, May 15, 1913. Had a dry scaly eczema for the last ten years. First started on right arm. Later the back of the neck became involved. Eczema has been there ever since. Has now an acute exacerbation for the last eight weeks with burning and itching all over the body. Examination showed skin of chest dry, inflamed and scaly. Eczematous patches also present on legs and feet and a fairly large patch on back of neck under hair line. Physical examination otherwise negative except for slight chronic alveolar trouble (pyorrhea). Bowels regular. Cultures from eczema scales and from surfaces underneath scales showed a pure growth of staphylococcus aureus, from which an autogenous vaccine was prepared. She received, on May 17, 200 million staphylococcus aureus vaccine; May 29, 500 million autogenous+500 aureus. Eczema improved on neck. June 3, 500 million autogenous+500 aureus; June 9, 1500 million autogenous+500 aureus. She received a similar dose on June 14, 21, July 2, 16 and 26, the eczema improving steadily. She received another dose on Aug. 9 of 1000 million autogenous + 500 million aureus and a similar dose on August 26, when the skin trouble all cleared up and remained well since. She has received eleven further similar treatments at an interval of from one to three months to keep up the immunity and prevent recurrence. She has gained in weight and is feeling very much better generally.

This case, a dry and scaly eczema of ten years' duration, the hardest type of eczema to respond to any method of treatment known, has readily yielded to the autogenous vaccine in large doses, remaining well for over one and one-half years. She has also shown a very marked improvement generally.[*]

The following case is probably the worst eczema case I had under observation. She responded in a most brilliant way to the vaccine. I cite it principally to show that the most hopeless case of eczema should not be given up without first trying the use of autogenous vaccine.

Case 38. S. R., female, 58 years, Jan. 7, 1914. General diffuse running eczema of two years' duration. Started with swelling of the face. Lost all her hair. Continuous scaling, crusting, itching and burning, affecting her eyelids and mucous membrane of her mouth. Lost sense of taste shortly after skin trouble began. Stomach fair, bowels constipated. Examination showed skin of face, hands, neck, chest, arms, part of abdomen and thighs covered with profuse crusting and acutely inflamed and swollen in parts. Eye-lashes gone. Eyes lacrymating. Lids ectropic. Hair all gone. Considerable itching and crusting of scalp. Skin in parts infiltrated, cracked and desquamated. In parts denuded with some thin scales covering the denuded and bleeding surfaces. Urine negative. Feces showed marked carbohydrate fermentation. Cultures from eczema showed staphylococcus aureus from which an autogenous vaccine was prepared and administered. She received 36 treatments in doses ranging from 400 to 5500 millions, at an interval of one to two days at first and later from one to three-week intervals. Eczema was markedly improved Feb. 1 and was practically well on March 21, 1914. Has remained well since except for occasional dryness and chafing of exposed parts, like the back of the neck and arms during the winter months, but no itching or burning sensation has been present. Has had no true eczema since. Treatments were kept up once in two weeks to once a month or longer to prevent recurrence. Eczema has been well. Hair growing well and thick. Eyelashes grown. Taste regained two weeks after treatment was begun. Bowels regular and feeling well generally. Has gained eight pounds in weight and considers herself a well woman now.

This patient when first seen was advised to enter a private hospital, where she remained for four weeks. She was kept on a milk diet for a week, to which were added other articles of food very gradually and cautiously. A daily morning washing with boric acid solution was given followed by a bland ointment.

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[*] The stock aureus vaccine, made up of several strains, was used in small doses together with the autogenous in the hope of immunizing the patient in a prophylactic way against the possibility of later infections with other strains of staphylococcus aureus different from the one which the autogenous vaccine was made up of.

The administration of her autogenous vaccine in large doses, together with the complete rest and change from her home surroundings, which were not very conducive to her getting better, as well as the topical applications, all helped, no doubt, to the rapid successful outcome of this case.

The idiosyncrasy to certain articles of food as a cause of skin affection is well known to everyone, a good example of which is fish poisoning. The relation of such food poisonings to eczema is referred to by standard text-books on skin diseases. The following case is a good illustration of poisoning by eggs.

Case 42. L. A. C., female, 42 years, applied for treatment April 8, 1914. Complained of a vesico-pustular eczema of face of twelve years' duration. Skin of face covered with a vesico-pustular eruption and generally much inflamed. When she was sixteen years of age she suffered considerably when eating anything with eggs in it. Urine negative, except for low specific gravity (1008). Feces examination was found negative. Cultures from the vesicles and pustules showed staphylococcus aureus and a few chains of streptococcus. Autogenous vaccines were made up and administered at 3- to 12-day intervals. She received nine treatments in all. She left on her vacation May 22, face practically well. Owing to her idiosyncrasy to eggs she was advised to take eggs sparingly, increasing it gradually. The leaving out of eggs in her diet helped, I believe, in the successful results obtained in this case.

Very striking illustrations of food sensitization as a cause of asthma and eczema, and the treatment of the same by immunization with increasing doses of white of eggs, have been reported by Talbot.[5] Although Talbot was able to help the milder types of asthma and eczema by gradually increasing doses of the particular protein that caused the poisoning, he was unable to help the more severe types in the same way. I believe his failure to be due in part, at least, to his neglect to take into account the bacterial invasion. Though it is secondary to the food poisoning, the condition will not be ameliorated, I believe, by the removal of the primary cause alone, after the secondary bacterial infection is once established.

The following two cases are good illustrations of the part played by mental anxiety and worry in eczema.

Case 47. C. W. W., male, 52 years, first applied for treatment May 8, 1914.

He had an acute eczema which began four months previous "following a cold." Had considerable business worry at that time. The eczema first began with swelling and serous oozing inside the ear, spread on the outside and to other parts of the body. Examination showed eruption of face, neck, ears and outer side of right thigh. Face, ears and neck markedly swollen, with considerable oozing, crust formation, vesicles and pustules. He was at once sent to a private hospital where he could be properly attended to. Cultures showed a pure growth of staphylococcus aureus, from which an autogenous vaccine was prepared and administered, at first every day and later every 3 to 12 days, in doses ranging from 250 to 6500 millions. Improvement was noticed 24 hours after first inoculation. He left the hospital on the sixth day, markedly improved. Improvement kept up steadily. Skin was practically well until Oct. 19, when he was under considerable nervous strain and business anxiety, at which time he had recurrence of swelling over his eyes and oozing behind the ears, which subsided in a few days. He had one treatment on Oct. 19, since which time he has been well. He received 19 treatments in all. The dose that was necessary to produce any effect upon this patient, as in a great many others with eczema and acne, was tremendous, reaching up to 6500 million organisms.

The other case where anxiety showed a definite relation to a recurrence of the eczematous eruption was that of:

Case 46. K. E. J., male, 46 years. First consulted me on Apr. 31, 1914, for eczematous eruption of face, neck and hands, of sixteen years' duration. The eczema first began in 1898 while in Cuba, with vesicles and serous oozing of fingers, which spread to the dorsal surfaces of hands and wrists. In 1911 he was treated by his physician with stock staphylococcus aureus vaccine obtained from me. The eczema cleared up and he remained free from it until last summer when it recurred. He was again treated with the same stock staphylococcus, with no effect this time. The eczema was getting worse, spreading to face and neck, when he was sent in to me for treatment with autogenous vaccine. Examination showed skin of dorsal surfaces of hands covered with a vesico-pustular eruption, marked oozing upon the slightest disturbance of the surface scales or crusts and cracking of fingers. Similar eruption present on skin of upper arms, neck and face. Urine negative except for high urea (3.2%). Feces showed a carbohydrate fermentation. Cultures from the various lesions showed an abundant growth of staphylococcus aureus from which an autogenous vaccine was prepared and administered. He received twenty-six treatments in all at three to ten-day intervals in doses ranging form 500 to 4000 million of organisms. Eczema improved markedly after the third treatment. The face and neck and forearms were free from trouble seven weeks after beginning of treatment (June 22). On August 21, skin practically well. Was told to come back in two weeks. He turned up Sept. 14th with a marked recurrence of the eczema on hands and fingers, stating that his only child was very ill and the doctor told him that he might lose her. He was very much worried over it and the skin began to break out about that time. He was well until that time. He was given three more treatments. The eczema again cleared up. He has been well since.

I believe that the recurrence in these two cases can be attributed in great part to the mental anxiety and that it was a little more than a coincidence.

The following case is a good example of an occupational eczema:

Case 36. Male, 54 years, optician was first seen on Oct. 20th, 1913. Face and scalp covered with a vesico-pustular eruption with considerable itching, of two months' duration. A careful investigation of his occupation revealed the fact that he does considerable developing of photographs. The careless scratching of his face and scalp while at work, transferring some of the developing fluid to the more delicate skin of those parts started a dermatitis, probably due to the metol poisoning in the developing fluid. This dermatitis became infected with the staphylococcus and produced a true eczema. The hands showed the affection only to a slight extent. Urine negative. Feces examination showed a carbohydrate fermentation. Cultures from the vesicles and pustules showed a pure staphylococcus aureus, from which an autogenous vaccine was made up and administered. He received eight treatments in all at an interval of from three to twelve days in doses ranging from 250 to 2000 million, and was discharged cured (Dec. 6, 1913), six weeks after treatment was begun. He has had no recurrence since. This patient has been again doing developing for over a year now, being careful not to touch his face at the time, without a return of his trouble. Beside the vaccine the patient received a calamine wash to allay the itching. He was ordered not to touch the developing fluid for a while and to *let his face alone*.

This case illustrates the importance of inquiring into the man's occupation as to what he actually does and not being satisfied with a general statement. His being an optician would never have revealed the fact that he actually was doing developing, which was the underlying cause of his complaint. I do not believe that this patient could have resumed his work in developing, without a recurrence, for over one and one-half years, unless the use of autogenous vaccine had rendered him immune to the secondary staphylococcus infection. Recurrences of the dermatitis due to the metol poisoning might have taken place, but they probably were so slight without the subsequent infection that they remained unnoticeable.

RESULTS.

The results obtained in these fifty-one cases can be briefly summarized as follows: Cured, 43 cases. Of these there were eight cases that had one or more recurrences, which yielded readily to from two to four treatments of their autogenous vaccine.

Improved, 6 cases.
No improvement, one case.
Results unknown, one case.

The number and duration of treatments were as follows:

Minimum number of treatments, 3.
Maximum number of treatments, 41.
Average number of treatments, 12.
Minimum duration of treatment, 2 weeks.
Maximum duration of treatment, 12½ months.
Average duration of treatment, 11 weeks.

Forty-five of the 51 cases here reported have been of the vesico-pustular and weeping variety. The remaining six were of the dry and scaly type. Two of the six were improved. Four were cured. The difficulty with some of the scaly types is that no cultures are obtainable and hence no autogenous vaccine can be prepared and they have to be treated with stock vaccines.

I wish to refer here to the results obtained with this method of treatment by various other men, as found in the literature.

Gilchrist[6] of the Johns Hopkins University reported 60 cases of eczema, 20 of which were markedly benefited, 20 were moderately benefited, and the effect on the remainder was nil. He used principally stock staphylococcus albus vaccine. He claims to have obtained most marked results in seborrheic eczema. After that the pustular and weeping eczemas were most benefited, while the scaly and indurated patches were not at all affected.

The surprising thing to me is that Gilchrist obtained as many good results as he did with stock vaccine and staphylococcus albus at that, because almost all the cases of eczema in my series and those of other men who have made a bacteriologic study of eczema (as already referred to—see under "bacteriology") showed the predominating growth to be staphylococcus aureus.

Smith[7] reports over 40 cases of eczema treated with the staphylococcus albus vaccine. The type which responded best he claims was the so-called eczema squamosum. In many of these cases the results were excellent. Pruritus, which was marked in a large per cent. of the cases, disappeared rapidly. He came to the conclusion from the clinical reaction of these cases to the vaccine that the staphylococcus is not necessarily pyogenic and that it is capable of setting up a dermatitis corresponding to certain types of the so-called eczema.

Other authors reported varying numbers of cases treated by vaccines with invariably good results. (Hazen,[8] Davis,[9] Farrell[10] and McDonald.[11])

Perhaps the most striking example showing the fallacy of treating all eczema cases with stock staphylococcus albus vaccine as recommended by Gilchrist is the following case:—

Case 25. C. C., male, 27 years, Jan. 19, 1912. Very marked vesico-pustular eczema over face, forearms, chest and legs, with considerable inflammation. Has had it on and off for the last seven years. Suffers now considerably with itching and burning night and day. Feces showed small, hard, marble-like pieces (sheep manure). Abundant undigested muscle fibers. Urine negative. Cultures from pustules and oozing surfaces of eczema showed staphylococcus aureus and long chains of streptococci, the latter predominating. He had eleven treatments of autogenous staphylo- and streptococcus vaccines at an interval of from five to seven days. Duration of treatment two months. There was a very marked improvement after third inoculation. Eczema practically cleared up. Was entirely well March 16. Discharged cured. Has had no recurrence of the eczema since.

Without the individual bacteriologic investigation and the use of the autogenous streptococcus vaccine, I believe that this case, as well as the other five cases, where streptococcus was found culturally, would have had to be reported as failures.

SUMMARY AND CONCLUSIONS.

1. Eczema in its primary stages is in reality a dermatitis, the exciting cause of which may be any external or internal irritant capable of exciting a dermatitis.
2. The "necessary something" or the "unknown quantity" in the etiology referred to in the text books, responsible for changing the dermatitis into a true eczema is the secondary bacterial invasion of the dermatitis.
3. The absence of bacteria in the primary or dermatitis stage of eczema and the abundant growth obtainable from the secondary or true eczema lesions, together with the clinical response to the autogenous vaccines—all fairly well substantiate the etiologic relation of bacteria to this disease.
4. Staphylococcus aureus, according to my findings, is the organism always present in eczema, at times mixed with streptococcus and rarely mixed with staphylococcus albus.
5. The general condition, food idiosyncrasies, habits and occupation of each individual patient should be carefuly studied in order to eliminate if possible the exciting causes of the dermatitic lesions.
6. Ointments, powders and other topical applications, though temporary in their effect, are necessary adjuncts to the vaccine treatment to protect the raw skin and help to relieve the patient's discomfort.
7. The presence of the streptococcus should always be kept in mind and when found a separate autogenous vaccine should be prepared therefrom.
8. The use of large doses—6000 million organisms or over—of the autogenous staphylococcus vaccine was found necessary for the successful treatment of this disease.
9. Vaccine treatment, more especially the use of autogenous vaccine, when administered in the proper doses, yields by far the best results in the treatment of this intractable disease—eczema.

In concluding I wish to thank Dr. Charles J. White for his helpful suggestions in the preparation of this paper.

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CASE REPORTS.

Case 1. M. W., female, June 20, 1908. Complained of eczema of the hands off and on for several years. Indurated eczematous patch about the size of a half dollar on the right wrist for the last four months. Staphylococcus opsonic index on beginning treatment was .65. She received 3 treatments of staphylococcus stock vaccine at intervals of 3 and 6 days, when she left on her vacation. Returned in September somewhat improved. Received 10 more treatments, at the end of which time the eczema was practically well. Was given 5 further treatments and was discharged cured, Jan. 2, 1909. Staphylococcus opsonic index on date of last treatment was 1.04.

Case 2. M. H. F., male, 55 years, Dec. 7, 1908. Complains of eczema on hands of 25 years' duration. Vesicles and pustules. Considerable itching and oozing. Cultures from unopened vesicles were found sterile. Cultures from pustules and oozing surfaces showed staphylococcus aureus. He also had a chronic alveolar osteomyelitis (pyorrhea) which showed a mixed infection of pneumo-, staphylo- and streptococci. Opsonic index was staphylo., .58; pneumo., .61; strepto., .84. He received six treatments. Was discharged cured. The opsonic index was up on Jan. 19 to staphylo. 1.19 and pneumo. 1.30.

Case 3. L. W. I., male, 26 years, July, 1909. This patient when he applied for treatment had a very marked form of generalized weeping eczema covering arms, shoulders, chest, part of face, ears and small areas throughout the rest of the body. Marked erythematous and squamous patches with vesicles and pustules. Very considerable serous oozing, marked swelling of ears and crust formation behind ears. Has been suffering considerably from itching and pain. The condition first started about a year ago. Has been growing worse steadily. Had no relief from any local applications. He received 41 treatments at 2- to 5-day intervals and was discharged cured Oct. 28 (a little over three months). He remained well until Dec. 11, 1912, when he came back with a mild recurrence, showing small areas on dorsal surfaces of hands covered with a vesicular eruption. Few vesicular patches also present on face. Skin otherwise negative. Urine negative except for high urea (3.4%). Cultures showed pure staphylococcus aureus. He received two treatments with autogenous vaccine. Was discharged cured again Dec. 14, 1912. Has been well since.

Case 4. H. A. L., male, 41 years, July 24, 1909. Had eczema on hands for 16 years. Complains now of eczema of legs of 3 years' duration. Eczema patches are dry, red and scaly. No oozing. Bowels regular. General condition good. Cultures from eczema negative. Cultures from nose showed staphylococcus aureus. Was given 5 treatments of stock staphylococcus aureus at 3- to 7-day intervals. Came back 6 weeks later and received one more treatment. Was discharged cured. Has been well since.

Case 5. R. S., female, 40 years, Sept. 1, 1909. Has an eczematous eruption of hands of 12 years' duration. Is worse during the winter. No other parts of body affected. Bowels constipated. Received 3 treatments at weekly intervals and was discharged well Oct. 20, 1909. Came back Nov. 26, 1910, with some desquamation of hands. Was given 2 treatments. Discharged cured. (Could not be located by letter).

Case 6. F. T., male, 6 years, Dec. 19, 1909. Complained of eczema of one year's duration. Subject to colds which hang on for a long time. Eczema cultures were found sterile. Was given 11 treatments of staphylococcus and pneumococcus vaccine at 5- to 14-day intervals. At the end of the 3d inoculation the itching had all gone. Pimples still present. After the eighth inoculation the eczema was all cleared up. No itching. Had 3 more treatments and was discharged cured, June 18, 1910. "Has been well since."

Case 7. H. A. H., male, 69 years, Feb. 22, 1910. Complains of eczema in popliteal space. Believes it began following a carbuncle two and a half years ago. Has been having boils of neck and scalp ever since. A number of small furuncles present on scalp now. Very painful and indurated. Urine showed a great many colon bacilli, free and clumped pus. Cultures from boils and eczema showed a pure staphylococcus aureus, from which an autogenous vaccine was made. He received six treatments at 3- to 14-day intervals. Discharged cured. Came back three months later (July, 1910) with a slight recurrence of furunculosis. Was given three more treatments. Discharged cured.

Case 8. C. R. R., male, 35 years, Feb. 26, 1910. Complained of acute eczema of face. Father had eczema and mother had psoriasis. Eczema started with red patch over chin. Is growing worse. Skin of whole face shows yellowish crusts and scales, with some oozing. No lesions on any other part of body. Staphylococcus opsonic index was .67, strepto., .87; pneumo., .58 and colon, .77. Cultures showed staphylococcus aureus. Urine cultures showed staphylococcus albus. Autogenous vaccine was made up and administered. He was given five treatments at 2- to 10- day intervals. Showed little benefit. Discontinued treatment against advice.

Case 9. H. S. W., female, 34 years, Apr. 28, 1910. Had eczema when a baby. Remembers having had it for years. Then it disappeared, remaining on flexor surfaces of elbows only. Two years ago it recurred with a rash on face. Lasted for over a year. Got better. Complains now of same kind of outbreak. Examination showed a typical acute eczema in the vesicular stage, with red patches and pin point vesicles. Opsonic index was staphylococcus, .66; streptococcus, 1.07; pneumococcus, .89 and colon, .87. She received seven treatments at 4- to 7-day intervals and was discharged well on June 13, 1910. She returned about two years later (Apr. 18, 1912) with a very slight recurrence. Was given six more treatments and was discharged well June 6, 1912. Has had no recurrence since.

Case 10. K. F. B., male, 57 years, June 18, 1910. Eczema of face on and off for the last two years. Bowels very much constipated. Urine negative. Eczema cultures showed pure growth of staphylococcus aureus, from which an autogenous vaccine was prepared. He received 8 treatments at intervals of from 4 to 14 days. Was discharged cured Aug. 8, 1910. Has had no recurrence.

Case 11. L. A., female, 24 years, June 20, 1910. Father troubled with a generalized eczema. Patient complained of scaly eczema on various parts of body. Began on legs and gradually spread upwards. Has been breaking out on her face for the last three months. Cultures from eruption were sterile. Stock aureus vaccine was administered. She received six injections in all at intervals of from 3 to 7 days. Face showed marked improvement after second treatment. Eczema on the whole better when she discontinued treatment three weeks later July 14, 1910.

Case 12. A. C. W., female, 39 years, Aug. 1, 1910. Has vesicular eczema of hands and fingers of four years' duration. Eczema began with swelling of both hands. Swelling disappeared soon after, leaving the vesicles, which got better in the winter. Every summer after that vesicles would reappear, getting worse each time until it finally formed into the continuous and confluent eczematous condition present now. Boils and carbuncles off and on for last four years. Bowels constipated. Feces fomented, darkish green, very foul. Urine negative. Cultures from oozing surfaces showed pure growth of staphylococcus aureus. She had 12 treatments at an interval of 3 to 5 days, and was discharged cured Oct. 11, 1910. The constipation was overcome to a great extent by agar agar and increase in the amount of water taken.

Case 13. R. H. A., female, 28 years, Oct. 14, 1910. Applied for treatment of chronic eczema, which she had ever since she was six months old. "Chiefly dry, rough and scaly. Not moist type." Has now a vesico-pustular eczematous eruption of face and neck. Practically no oozing. Had a bad attack of urticaria ten years ago, which kept recurring, at times as often as twice a week, until last May. Has to be very careful with her diet. Cannot eat fish, strawberries, tomatoes or veal without getting poisoned by it. Bowels very constipated. Takes pills and laxatives continuously. Was in a private sanatorium for seven months without relief. Urine normal. Feces showed very marked carbohydrate fermentation. She received 14 treatments of stock vaccine at intervals of from 3 to 10 days. Discharged cured as to eczema. When last seen, December, 1912, eczema was still well. Was heard from on Feb. 9, 1915, in answer to a letter of inquiry, that except for occasional slight passing eruption in the winter she has been very well.

Case 14. S. F. P., male, 36 years, Jan. 14, 1911. Complains of eczema of hands of 18 years' duration. First appeared with yellow blisters associated with intense itching. Skin generally sensitive. Urine negative except for urea (3.1%). Cultures from pustules showed pure staphylococcus aureus.

Staphylococcus opsonic index was .49. Autogenous vaccine was prepared and administered. He received 22 treatments at 4- to 10-day intervals. On April 24, 1911, was markedly improved. Discontinued treatment against advice. When last seen, January, 1915, he said that eczema was well since he was treated and is well now.

Case 15. H. F. R., male, 60 years, Feb. 6, 1911. Complained of a dry, scaly eczematous eruption on ankles and on both legs, of several years' duration. Had been treated for it for two years with ordinary treatments with no relief. He received four treatments with stock vaccine at 5- to 10-day intervals when eczema was all well. Was given 4 further treatments at intervals of from 3 to 4 weeks as a prophylactic measure and was discharged cured.

Case 16. L. I., male, 3 years, Feb. 13, 1911. Eczema of hands and face of two years' duration. Seropustular eruption present now over face, ears, both hands and wrists. Constipated since he was born. Takes cathartics and enemas all the time. Cultures from the pustules showed a pure staphylococcus aureus from which an autogenous vaccine was prepared. He received 15 treatments at 3- to 10-day intervals. After the second treatment eczema was markedly improved. Improvement continued steadily until March 31, when there was no more itching or oozing. On May 12, the eczema had all cleared up. He received 2 more treatments and was discharged cured May 25, 1911. Has had no recurrence.

Case 17. L. Z., male, 52 years, May 1, 1911. Complains of eczema of five years' duration. First started on right leg. Spread quickly over legs, thighs, hands and face. Began with little blisters. Itching very intense day and night. Bowels constipated. Urine negative. Staphylococcus opsonic index was .62; colon .62. Cultures showed a pure growth of staphylococcus aureus from which an autogenous vaccine was prepared. He received 13 treatments at intervals of 5 to 11 days. Eczema was markedly improved after the third inoculation. Improvement kept up steadly until Nov. 23, 1911 when he was sent off for a month. He received six more treatments at one to two month-intervals and was discharged well, May 14, 1912. He returned Sept. 17, 1912 with a slight recurrence which was relieved by three further treatments (Sept. 17, 24 and Oct. 1). He returned again on March 25, 1913 with a slight itching on thigh. Was given one treatment on that date and another on March 31. Was well until Oct. 24, when he returned with a slight swelling around eyes and around chin. Had one treatment on the same date and another on Oct. 30, 1913. Has been well since.

Case 18. T. F. L., male, 48 years, May 31, 1911. Complains of itching of head, particularly behind the ears, with some oozing. Examination showed psoriatic patches round elbow joints, smaller spots on hands and other parts of the body. Few patches on scalp. Behind ears there is an erythematous and scaly eruption, very itchy, with serous oozing. Urine negative. Feces fomented, not formed and foul, with large amounts of unchewed and undigested meat remains, vegetable and starch remains. Cultures showed predominating staphylococcus aureus and few chains of streptococcus. He received eleven treatments in all at an interval of from 5 to 7 days. Eczema was cured, psoriasis showed slight improvement. The opsonic index when he first began treatment was staphylo., .61; strepto., 1.11; pneumo., 1.05; and colon .49. No other opsonic tests were made.

Case 19. C. R., female, 19 years, Aug. 16, 1911. Complains of vesicular and squamous eczema over arms, face and neck and back of ears of fifteen years' duration. Bowels slightly constipated. Physical examination negative except for slight presystolic murmur. Feces was found to be made up of small hard marble-like pieces (sheep manure). Urine negative. Cultures from oozing surfaces showed pure growth of staphylococcus aureus. She had twelve treatments in 3½ months at an interval of from 3 to 7 days. She showed very marked improvement. Left on her vacation. Has not been heard from since.

Case 20. H. H. C., male, 51 years, Sept. 19, 1911. Complained of eczema of feet and ankles of 12 years' duration. First came on while in the Philippines. Began with acute ulcerative condition of soles of feet which disappeared at the end of about three weeks. This was followed by an eczematous condition which has kept up since. Physical examination negative. Cultures showed staphylococcus weak aureus. An autogenous vaccine was made up and sent to his physician in Washington who kept up treatment. When seen again on his visit to Boston, Dec. 8, 1911, eczema was well. He had no trouble since.

Case 21. M. S. W., male, 60 years, Sept. 21, 1911. This patient was referred for treatment for an infection of the left antrum. He also had an old standing erythematous vesico-pustular eruption on face and other parts of body. Urine negative. Feces unformed, fomented and foul. Marked increase of starch and muscle fibers. An autogenous vaccine was made up from the pus obtained from the antrum, organisms staphylococcus aureus and streptococcus. He had four treatments with autogenous vaccine mixed with stock aureus (cultures were not obtained from the eczema) at intervals of from 5 to 8 days. Treatments were continued by his family physician in Washington, and while on his vacation for about 12 months. There was marked relief in the discharge from the antrum while the vesicles and pustular eruption was entirely cured when last seen (Nov. 2, 1911). Had no recurrence of eczema since.

Case 22. R. M., male, 31 years, Sept. 30, 1911. Eczematous eruption and cracking of skin of right hand of one year's duration. Gets worse in cold weather. Very marked itching. Had eight treatments at 7 day intervals. Was discharged cured. Has not been seen since. Could not be located by letter.

Case 23. L. B. A., female, 6 months, Oct. 31, 1911. Had eczema all over body since she was one month old. Father's brother has eczema. Bowels somewhat diarrheal. Had been always breast fed. Eczema growing worse all the time. Cultures showed a pure growth of staphylococcus. An autogenous vaccine was made up and administered. She received 4 treatments at intervals of 5 to 9 days. Received one further treatment one month later and was discharged well. Five months later (May 2, 1912) she returned with a slight recurrence. Was given one treatment and has been well since.

Case 24. G. I., female, 16 years, Dec. 26, 1911. Had eczema when a child. Has practically never been free from it. Used an ointment to relieve the itching. Has now eczema behind ears with marked oozing and fissuring, spreading upwards towards scalp. Skin otherwise negative. Urine negative. Feces not formed, very foul, fomented, considerable undigested vegetable and meat remains. Cultures showed pure staphylococcus aureus. She had 6 treatments at an interval of 1 to 2 weeks. The eczema disappeared and remained well up to Oct. 19, 1913 (one year and eight months), when she showed a very slight recurrence. She received seven more treatments and was discharged cured Jan. 3, 1914. Has been well since.

Case 25. Included in the body of the paper.

Case 26. M. W. E., female, 45 years, Jan. 27, 1912. Had eczema of face all her life. Had never been free from it. Skin of face covered with erythematous and pustular eruption. Skin over other parts of body in good condition. Had electric treatments, with no relief. Urine negative except for high urea (3%). Cultures from pustules showed staphylococcus aureus and chains of streptococci. An autogenous vaccine was made up. She received 12 injections at intervals of four to 21 days. Was discharged well May 14, 1912.

She returned 11 months later (April, 1913) with a recurrence of the eczema. She was given eight more treatments at three- to nine-day intervals and was discharged cured, June 23, 1913. Has been well since.

Case 27. P. E. L., male, 63 years, May 4, 1912. Physician. Has had eczema of right leg for last six years. Has some eczematous eruption on face. No relief obtained from local applications or x-ray treatment. Cultures from eczema showed staphylococcus aureus and albus from which an autogenous vaccine was prepared. He received 17 treatments at two- to eight-day intervals. Eczema showed marked improvement after the first few injections and continued improving steadily. Eczema was well August 10, 1912. Has had no recurrence.

Case 28. D. E. M., female, 35 years, June 1, 1912. Had erysipelas three years ago. Skin of face and around mouth troubled her for a couple of months after. Skin became better but not quite well. Skin of face became very much worse the last two months. Marked itching and burning. Spread all over face within the last three weeks. Feels drawn, dry and hot. A typical erythematous and in parts squamous eczema. Has also a marked advanced stage of chronic alveolar osteomyelitis (pyorrhea). Several teeth loose. Considerable pus around many of them. Gums spongy and receded. Cultures from eczema showed staphylococcus weak aureus and albus. Urine negative. She had six treatments at intervals of five to seven days. Duration of treatment five weeks. Eczema was all well following the third treatment. She continued treatment for her gums. Discharged cured as to eczema July 6, 1912.

Case 29. S. M., female, 6 months, Aug. 30, 1912. Eczematous rash present all over body. First came on during the hot weather a month previous. Started on her legs and back. Gradually covered whole body. Breast fed. Is not constipated. Has a great deal of itching. Keeps her awake nights. Cultures from pustules showed staphylococcus weak aureus. She received four treatments in all, the first two at intervals of five days, the last two at two- and four-week intervals. After the second injection the eczema was practically cured. Received the last two injections prophylactically. Discharged cured Oct. 15, 1912.

Case 30. H. I. W., male, 92 years, Sept. 28, 1912. Has erythematous eczema for last two years on upper arms, legs, wrists, face and neck. Is worse on the face. Bowels constipated (small, hard marble-like pieces). Urine showed heavy trace of indican. Otherwise negative. Cultures showed a pure growth of staphylococcus aureus. An autogenous vaccine was made and administered. He received six treatments at intervals of six to 14 days. Eczema improved considerably; itching less and skin looked better. Discontinued against advice. Was getting on fairly well when last heard from.

Case 31. B. L. T., male, 37 years, Oct. 8, 1912. Eczematous eruption on left foot of seven years' duration. Itching worse at night. Eye lids also involved. Has been getting worse gradually. Resisted various treatments by eye specialist who sent him in for vaccine treatment. Cultures showed a predominating growth of staphylococcus weak aureus and an occasional chain of streptococcus. An autogenous vaccine was made up. He received 11 treatments at five- to 21-day intervals, when his eczema had entirely cleared up. Received one more treatment seven weeks later and was discharged cured. Has had no recurrence.

Case 32. F. P. J., male, 55 years, Jan. 23, 1913. Squamous eczema of hands, forehead and back of ears; elbows and legs especially bad, soles of feet scaling markedly. Thirty years' duration. No vesicles present at present time. Typical case of eczema squamosum. Physical examination otherwise negative. Urine negative. Stool watery. Very foul. Considerable undigested meat and starch remains. Cultures from oozing surfaces obtained by removing the scales showed staphylococcus weak aureus. He had four treatments at two- to four-day intervals. There was a slight improvement. Left on his vacation and has not been heard from since.

Case 33. Included in body of paper.

Case 34. K. L., female, 21 years, Oct. 6, 1913. Complains of eczematous eruption on right middle finger of four years' duration. Skin of finger dry and cracked with considerable itching. Acne of face for several years. Skin otherwise negative. Cultures from eczema showed a pure growth of staphylococcus aureus from which an autogenous vaccine was prepared. She was given eight treatments at four- to 21-day intervals when she was discharged cured. Eczema showed marked improvement after third injection and continued well until discharged cured, Oct. 13, 1913. No recurrence since.

Case 35. S. N., female, 36 years, Oct. 8, 1913. Eczematous eruption of many years' duration. Examination showed marked eruption with small blister-like papules on skin of flexor parts of elbows, extending upwards to shoulders, front of neck, back of neck and on inner side of right thigh. Skin cracked and excoriated with intense itching. Urine negative. Cultures showed a pure growth of staphylococcus aureus. An autogenous vaccine was prepared. She received 19 treatments at intervals of three to seven days. Had four further treatments at three- to eight-week intervals. Eczema showed improvement at the end of the second treatment and was practically well after the fifteenth (Nov. 28). Was discharged cured May 1, 1914. Has had no recurrence since.

Case 36. Included in body of paper.

Case 37. B. A., male, 6 months, Dec. 29, 1913. Eczema of greater part of body. First started when two months old, on side of face and head. Cultures from oozing surfaces and crusts showed pure staphylococcus aureus from which an autogenous vaccine was made and administered. He received seven treatments in all, at intervals of from three to nine days. Eczema showed improvement after third inoculation and was practically well after the fifth inoculation, Jan. 26, 1914. Has not been heard from since.

Case 38. Included in body of paper.

Case 39. K. H. R., female, 38 years, March 3, 1914. Complains of burning and itching eruption on face of one year's duration. Eruption would start with small blotches and papules coming to a head. Not much pus present. Urine negative except for urea (2.2%). Cultures showed pure staphylococcus weak aureus. An autogenous vaccine was made up and administered. She received seven treatments at five- to seven-day intervals when she was discharged cured, April 23, 1914. Has had no recurrence.

Case 40. B. J. M., male, 4½ years, March 31, 1914. Had eczema ever since he was five months old. Very bad the last four weeks. Asthma for the last year and a half. Examination showed hands, elbows and neck covered with a weeping eczema with crusts and open wounds. Lungs show typical asthmatic condition. Urine negative. Cultures showed pure staphylococcus aureus, from which an autogenous vaccine was made. He received 11 treatments in all, at intervals of from four to 14 days. Eczema showed marked improvement at the end of the third treatment. Improvement continued steadily. Discontinued treatment against advice June 6, 1914. Eczema much improved.

Case 41. L. C. I., female, 36 years, April 2, 1914. Eczematous eruption on right middle finger and on dorsal surface of left hand. Finger began to trouble her 14 years ago and trouble continues to recur at intervals. One brother has eczema. Cultures made from the serous oozing showed a pure staphylococcus aureus from which an autogenous vaccine was prepared. She was given six injections at intervals of four to 21 days. The eczema showed marked improvement after the second treatment. Improvement continued until the sixth injection, May 7, 1914, when the skin was entirely healed and well. Was given three more treatments and was discharged cured, July 1, 1914. Has been well since.

Case 42. Included in body of paper.

Case 43. R. C., female, 44 years, April 18, 1914. Had eczematous eruption for last three years, principally on hands. The last week she had a very acute pustular eruption all over palms of hands, worse on right hand. Cultures showed pure growth of staphylococcus aureus. She received bi-weekly treatments for the last ten weeks. Very marked improvement at the end of the eighth treatment. Kept on improving steadily. Skin has been all well since Aug. 18, 1914.

Case 44. P. M., female, 32 years, April 21, 1914. Had sero-purulent eczema on face and dorsal surfaces of hands for five months. Skin showed many serous pustules. Bowels very constipated. Feces showed marked carbohydrate fermentation. Cultures from the pustules showed a pure staphylococcus aureus. An autogenous vaccine was made up. Was given 14 treatments at intervals of from two to seven days when she was discharged well. Has had two more prophylactic injections at intervals of three weeks. Has been well since. This case was very troublesome on account of a general erythema, soreness and marked inflammation of the face which persisted until it finally yielded to the vaccine.

Case 45. T. M., male, 54 years, April 22, 1914. Complains of squamous and pustular eczema for last four years, mostly on neck. Erythematous patches and itching also present on back and the inner surfaces of thighs. Cultures showed staphylococcus aureus. Was given five bi-weekly treatments. Showed much improvement and left off treatment on account of leaving town (June 3). Returned to town again, resuming treatments Sept. 23. Received nine treatments. Is practically well. Still under observation. Treatments were bi-weekly.

Case 46. Included in body of paper.

Case 47. Included in body of paper.

Case 48. G. D. A., male, 17 years, July 13, 1914. Complains of eczema since he was six weeks old and of asthma of eleven years' duration. Skin of neck and under both knees in popliteal space showed scales and small vesicles and pustules. Lungs showed a typical asthmatic condition. Urine acid in reaction, very slight trace of albumen and high urea (3.5%). Feces showed marked carbohydrate fermentation. Cultures from the eczema showed pure staphylococcus aureus from which an autogenous vaccine was made and administered. Patient was sent to a private hospital and was given 11 injections at intervals of one day, when he was sufficiently well to leave hospital. Was given nine further treatments at intervals of from two to seven days. Showed marked improvement in both eczema as well as asthma. Left for school Sept. 15, markedly improved.

Case 49. L. S., male, 23 years, Sept. 14, 1914. Complains of an eczematous eruption of nine months' duration on inner side of thighs, on hip and right armpit. Skin cracked and crusting. Serous oozing present. Cultures showed pure growth of staphylococcus aureus from which an autogenous vaccine was prepared. He received eight injections at intervals of from three days to two weeks. Eczema showed very marked improvement after first treatment and continued to improve steadily. Was given one further prophylactic treatment six weeks later and was discharged cured, Feb. 4, 1915.

VARIATIONS IN THE SENSORY THRESHOLD FOR FARADIC STIMULATION IN PSYCHOPATHIC SUBJECTS.

II. Manic Depressive Insanity.*

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The purpose of this study is to follow further the evidence obtained in a former series[1] of cases in regard to the sensory threshold for faradic stimulation in the manic-depressive group. In the former paper the following conclusion was drawn from the evidence then available: "The manic phase of manic-depressive insanity shows a normal threshold, the depressive a pathologically high threshold. One case observed at intervals for two years seems to show a high threshold ranging down to normal with the variations of his depression down to a normal emotional state." This conclusion has received ample confirmation in the present series of cases. The attempt has been made in this study to make further correlations in this group of cases. The question naturally arises as to whether this definite finding of a high threshold (diminished sensitivity) in depressed cases and of normal threshold (normal sensitivity) in the manic cases will throw any light on the nature of these psychic states.

As to the last point, many opinions have been advanced. In the 1913 edition of his text-book Kraepelin reviews at length his own and others' views, and finally arrives at the conclusion that all the clinical manifestations of this disease are but the results of a single pathological process. He feels that a very few basic changes combined in infinitely varying proportions make up this syndrome. He considers the chief cause to be a congenital phychic change and finds a definite "Anlage" of depressive, manic, and cyclothymic states in a large proportion of the Munich cases. As an explanation of the psychical "Anlagen," the hereditary factor is, of course, evoked, and is found by Kreapelin in over 80% of the cases. Thus he is certain that the personality is a marked factor in determining the type of the disease, and he explains the greater number of depressed states in late middle life as due to the further development of the personality at this time. He summarizes others' ideas as to the ultimate cause as follows. Meynert considers the cause to be an instability of the vasomotor center, especially in its control of the cerebral vessels. According to this observer the depressions are due to cerebral anemia, the manic states to hyperemia. Lange, in 1896, advanced the idea of the similarity of this syndrome to certain periodic metabolic disorders, especially gout. Stegelmann found a diminished uric acid excretion during depressions. Pardo considered it an intoxication with the metabolic products of skin bacteria. He found an increase in the flora of the skin during the attacks, and more especially noted the appearance of a certain cocco-bacillus at this time. He also noted the fact that the attacks were often the sequel of dietetic errors, and that the attacks often terminated with a diarrhea. Parhon and Marbe lay the cause to the thyroid, Muratow to the adrenals, and Stransky to general metabolic disurbances. Anglade and Jaquin, following the lead pointed out by Morel and Doutrebente in epilepsy, state that in this disease as well as in epilepsy, the neuroglia presents an "infantile appearance," and also consider the cause to be congenital. Thalbitzer advances the theory that the cause is to be sought in a disturbance of the blood supply to Helweg's triangular tract. This is the outcome of the latter's observation of the frequency of lesions in this tract in this disease. Kraepelin finally states that " . . the true cause of the disease is to be sought in lasting internal changes, which are perhaps always, at least very often, congenital." (p. 1369.) He also feels that according to this idea the symptoms of mania and depression are perhaps merely different degrees of the same process, and hence not so different as may appear. Yet Kraepelin insists that there is a definite pre-manic-depressive temperament for each of the forms. He finds that the depressive temperament may have superposed upon it attacks of mania without really altering the basic condition. He uses this as an argument in favor of his impression that the states of mania and depression are not so opposed as would be thought from a superficial examination of these states. Bresler[2] also considers mania and depression to be very nearly allied and expressions of the same fundamental process. He further states that they may be commingled in any case in infinitely varied proportions. As to this Kraepelin says: "Of greater significance than the construction of clinical pictures from certain underlying disturbances, is the realization that the disease forms here collected into a clinical entity not only run over into each other without recognizable boundaries, but that they may neutralize and destroy each other in the same case." Kraepelin includes in this disease the entire gamut of periodic and circular insanities, also what were formerly called simple manias, depressions and even some cases of amentia. He feels that the common basis of this disease is the prognosis; *i.e.*, none ever end in deep dementia, even if the attacks are almost continuous throughout the lifetime of the individual. As to

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Note.—I wish to express sincerest thanks to Dr. E. E. Southard not only for the use of the clinical material, but also for his kindly coöperation and invaluable suggestions.

* Being Psychopathic Hospital Contributions Number 68 (1915.5). This paper was read in abstract at the March meeting of the Boston Society of Psychiatry and Neurology. (*Bibliographical Note.*—The previous contribution was by Donald Gregg, entitled "Somatic Characteristics of General Paretics," published in the Boston Med. and Surg. Jour., April 8, 1915.)

somatic findings, Kraepelin mentions the following observations. Paton found that manics made poor subjects for sensibility tests. Wolfskehl found by using the tachistoscope that they could read correctly only 75% of the number of a series of letters which the normal person could grasp. Franz and Hamilton found the threshold for touch, pressure, and pain high in depressed patients. Aschaffenberg and Isserlin found the association time lengthened in patients who exhibited flight of ideas, but very much more so in depressed cases. Rehm, in investigating the capacity of the thought mechanism by its fatigue threshold, concluded that manic-depressives were on the average possessed of one-third less capacity than normal people, but that the manics were much better than the depressed cases. Kraepelin, in speaking of somatic delusions, says, "This increased sensitivity to the occurrences in their own bodies stands in vivid contrast to the depression of *central sensitivity* (italics mine) in manic states." Of course he here refers to objective central sensitivity. Thus we find that objectively the central sensitivity to stimuli from without appears by all previous investigations to be lowered in this disease, although less in the manic cases than in the depressed; that many theories of all kinds have been evoked to explain the disease, but that the factor of heredity seems to be the most prominent; that Kraepelin considers the cause to be an hereditary predisposition which is manifested in the personality of the individual. "Finally, we must consider the unapparent continuous changes in the mental life, which also appear in the intervals between the frank attacks as evidence of the *common psychopathological basis* of manic-depressive insanity" (p. 1237. Italics Kraepelin's[3]).

"We feel that the evidence to be presented will be of such a nature that it will rather support the idea that mania and depression are in reality different states or perhaps opposite perversion of function of the central nervous system, or perhaps of certain centers." (Southard and Bond—"Cells in Manic and Depressed States.")

The present paper deals with 66 observations on 25 cases chosen at random from those admitted to the Psychopathic Hospital. The diagnosis of manic-depressive insanity (which is made here according to the Kraepelin teaching) was in every case but two the final discharge diagnosis. The data obtained from this series are to be considered simply as a further note. The treatment in all cases consisted in rest, careful nursing, and hydrotherapy in the form of prolonged baths and moist warm packs. Even the manic cases with marked "leveling of ideas" made good subjects. In this series, as in the former, the only observations considered are those which were proved to be valid by constant trying and retrying of each position of the secondary coil of the inductorium. There were only two cases which responded so irregularly that they could not be tested. These were both in the manic group, and both later gave valid results. There were a few cases that were so disturbed that they could not even be made to sit down in the chair to take the test and which were transferred to other institutions before they could be tested. There were also a few depressed cases that showed such a marked fear reaction that they could not be tested.

The method employed is the quantitative method of Martin,[4] by which the "shocks" delivered by the secondary coil of an inductorium can be accurately measured in physiological units. The method depends on the fact that, with a primary current of known, constant strength, the shocks delivered by the secondary of an induction coil increase in strength as the secondary approaches the primary. A specially calibrated coil with the slide for the secondary graduated in millimeters, is employed. The patient dips his fingers (the index and middle fingers of the left hand) into two liquid electrodes (these consist of a mercury and calomel paste contact between the wires from the secondary of the coil and an overlying layer of salt solution), and is instructed to press a telegraph key whenever he feels a shock. The operator, who sits in a different room from the patient, cautiously approaches the primary coil with the secondary, a millimeter at a time. At each millimeter a key is pressed which short-circuits the "make" shocks and allows the "break" shocks to get through to the patient. Finally the patient signals, indicating that he has felt the shock. This point is tried and retried until the possibility of conscious or unconscious deception on the part of the patient is absolutely ruled out. This process is repeated with 10,000, 20,000 and 30,000 ohms resistance in the secondary circuit. Thus four independent readings of the position of the secondary of the coil with relation to the primary are obtained. The resistance of the coil itself is 2900 ohms. The resistance of the patient's skin is taken to be 2100 ohms. For work of the highest accuracy this resistance should be determined in every case, but it has been found that this resistance is a very constant figure, varying not more than 500 ohms to either side. From these data the value of the shock necessary to produce sensation may be calculated by certain formulae. The result is expressed in Beta units. For normal adults this threshold[5] has been found to be in the neighborhood of 100 Beta units at its lowest point in the daily,[6],[7] variation. It varies from 60 to 160 at different times of the day and on different days of the week. One Beta unit is the average amount of shock required[8] to cause a minimal contraction of a frog's gastrocnemius stimulated through the sciatic nerve in the well known nerve-muscle preparation. The threshold in this work has been expressed in Beta units throughout, and, of course, the higher the value the less sensitive is the subject.

In the present series, consisting of 12 males and 13 females ranging in age from 18 to 67 years, all tests were made between 4 and 8 p.m., *i.e.* at a time when the threshold is at its highest point in the diurnal variation.[6]

The results, as shown in tabular form, show the average of the 12 depressed cases to be 287 Beta units, a distinctly pathological value. This group consists in 44 observations ranging from 93 to 1661 Beta units. Ths latter enormous value was obtained in an alcoholic, and returned after a short time in the hospital to 400 Beta units, a not uncommon value for these cases. The only exceptions to the high threshold in this group were those cases which were tested at or very near the time of discharge. One case in particular is of interest as having been followed through two depressions. This case will be considered in greater detail later.

The average value of the threshold for the cases in the manic phase of the disease is 149 Beta units, a normal or slightly low value. This group consists of 22 observations on 13 patients. There were two exceptions to the universally low values obtained. One of these was considered clinically to be of the mixed type, perhaps one of the cases which Kraepelin considers to be periodic mania superposed on the depressive "Anlage." The other was undoubtedly a case of hypomania, but had a systolic blood presure of 155 m.m. of mercury and a diastolic of 115, the latter being, according to Musser,[9] almost pathognomonic of renal disease. This fact may account for the high threshold, as very high values have been found in the senile and arteriosclerotic psychoses. The lowest figure in this group was in an alcoholic with absent ankle jerks, Argyll-Robertson pupils, a negative Wassermann reaction in blood and spinal fluid on the day of his admission to the hospital. The last seems to be the significant point, as he was very euphoric. A few days later under hydrotherapeutic treatment he was much improved and his threshold was found to be 135 Beta units, as compared with the first value of 23 Beta units. With these exceptions, the manic cases were found to have a normal or slightly lowered threshold.

Those cases having definite hallucinations and delusions had a higher threshold than cases not showing these symptoms. It is evident that these cases averaged higher values than even the depressed cases. Of the cases showing one or both of these symptoms, 10 were in the depressed phase and nine were manic. As it is found that the manics showing the symptoms yield no values over 200 Beta units, *i.e.* the manics showing these symptoms were high as compared with the other manic cases, but not high enough to come into the depressed group. The reason for the high averages is to be laid to the enormous thresholds shown by the depressed cases showing this symptom. To be sure, the manic cases showing these symptoms yielded readings which were at the upper limits of the normal range, and perhaps at times a little beyond. The fact that the readings in this group varied so greatly among themselves makes this conclusion of less value than would appear.

Table I.

	Type.	No. Cases.	Male.	Female.	Limits of Variations.	No. Observations.	Average.
Emotional Tone.	Depressed	12	5	7	93-1661	44	287
	Manic	13	7	6	23- 267	22	149
Hallucinations.	Hallucinated ...	5	4	1	23-1661	10	321
	Not hallucinated	20	8	12	72- 462	56	222
Delusions.	Deluded	12	6	6	23-1661	22	290
	Possibly deluded	5	3	2	93- 264	9	159
	Not deluded ...	8	3	5	101- 462	16	208
	Total	25	12	13	23-1661	66	237

Other correlations (blood pressure, reflexes, usual sensory tests, tremors, cyanosis, etc.) were attempted but yielded no results. Other than those mentioned as alcohoilc there were no cases who used any drugs. With the exception of the above-mentioned case, none showed any reflex disturbance or other neurological signs.

The prognostic value of this test in depressed cases is well illustrated by the case which has been cited before,[1] and which may be repeated here in greater detail. A piano tuner of 56 years of age was first seen in July, 1912. At this time he complained of inability to do his work and more especially of his lack of interest in things which formerly interested him, and of inability to get started at anything. At this time he was found to have a threshold of 318 Beta units. As the depression gradually wore off in the course of the next three weeks values of 219 and 163 Beta units were obtained, and finally, after a short vacation, his threshold fell to 106 Beta units. From this time on he felt perfectly well until May, 1914, when he returned feeling that another attack was approaching. At this time his threshold was 227 Beta units. He was advised to take a vacation immediately, which he did. In the course of the summer he wrote that he was steadily improving. He was again seen after he had been at work for a month. He was seen on a Saturday at 5 p.m., after a week's hard work. At this time he stated that he was feeling perfectly well. His threshold was 197 Beta units, a normal value for this time of the day[6] and day of the week.[8] The other depressed cases that have been followed to recovery have shown the same thing, though in a less striking way, because the others have been true depressions rather than cases of "simple retardations." It is unfortunate that the manic cases cannot be followed as completely as can the depressed cases.[2] Thus it will be seen that one practical application of this test will be to determine when a depression ends, or rather to give us a means of determining by a numerical standard whether a patient has improved or is getting worse.

The application of this test as a point in the differential diagnosis of manic-depressive insanity will certainly be possible. That the differentiation of true depressions of this psychosis from those of the psychoneurotic group will be made vastly easier by the determination of this threshold is definitely indicated by the evidence which is at present available. In this psychosis the threshold is always raised in depressed states, whereas in the psychoneurotic group of cases it has been found to be within normal limits.[1] Thus we feel that the determination of this threshold will give information not only of prognostic, but also of diagnostic value, as far as can be determined from the evidence now available.

From this group of cases there has been accumulated evidence to show that the sensitivity of individuals suffering from manic depressive insanity to faradic stimulation is increased to a pathological point during the depressed phase and is normal or slightly decreased during the manic phase. It is a significant fact (and it is on it that the suggestion is based that the manic forms may have a slightly lowered threshold) that the manic forms yielded slightly more results under 115 Beta units than would a series of normal individuals at this time of day. This finding is also in accord with the view suggested by Southard,[10] that hyperkinesis and allied states are associated with a "tissue-simplification," perhaps due to a withdrawal of the cortico-thalamic "inhibitory" or "switch-setting" impulses. Bevan Lewis has found an absence of metabolic pigment in hyperkinetic states, and Southard and Bond[11] have shown an increase of metabolic or catabolic lipoid substances in depressed cases of manic-depressive insanity. That the latter finding may be correlated with a "tissue-complication," as the former has been correlated with a "tissue-simplification" is not improbable. With the histo-pathological evidence which Southard has reported, it is perhaps, not wrong to consider these variations in the sensory threshold as evidence of a functional hyper- or hypotonicity of these or similar centres, brought about, perhaps, by disturbances in cell metabolism. That this threshold appears to be a valid index of the condition of the "tone" of the central nervous system is also supported by the observation that the variations in normal subjects[6] correspond to certain variations of central nervous system "tone,"[7] as determined by other observers and by different methods.

It is, furthermore, found that four-fifths of these cases at necropsy show no gross brain lesions, and that the remaining fifth show lesions similar to those found in dementia precox,[12], [13] plus a slight grade of internal hydrocephalus. It seems as though this evidence from the anatomical point of view, taken in conjunction with that gained from the physiological, makes very probable the existence of variations in the functional activity of the central nervous system or of its parts as the basis of the variations of the emotional tone in manic-depressive insanity. From this point of view it seems as though Kraepelin's "Anlagen" may turn out to be congenital susceptibility to variations in tone rather than variations of an anatomical nature.

In conclusion, it is to be emphasized that in our opinion the evidence here presented points very strongly in the direction that manic-depressive insanity is a result of deranged function, and that the pathological physiology of the central nervous system in this psychosis deserves further study, especially as to whether the states of mania and depression may not be due to opposite perversions of function.

SUMMARY.

1. Twenty-five cases[*] of manic-depressive insaity have been selected at random from the clinic of the Psychopathic Hospital, Boston, in order to follow further the results obtained in this group of mental diseases in a former orientation study.
2. The present series has confirmed the impression gleaned from the first series of psychopathic cases.
3. The method employed is that devised by E. G. Martin for the measurement of induction shocks.
4. The cases in the depressed phase show a decided raising of this threshold to definitely pathological values.
5. This increase in the depressed cases falls to normal with the return to a normal emotional state.
6. The cases in the manic phase show a normal or perhaps slightly lowered value for this threshold.
7. The cases with hallucinations or delusions or both show when averaged a markedly higher threshold than the average of even the depressed cases. The average is obscured by the fact that it contains many nearly normal values obtained in manic cases. These symptoms, however, seem to indicate a more profound derangement of function, as the cases, whether manic or depressed, which showed them yielded the highest values in the group in which these cases fell.
8. The impression that variations in the sensory threshold for faradic stimulation are of central origin (derived from work on normal subjects) seems to be borne out by this group.

[*] The case numbers are: 2165, 4291, 3709, 1901, 3872, 3700, 11, 3860, 3886, 4228, 3734, 3585, 2037, 3837, 3687, 3896, 1764, 2153, 3640, 3895, 1970, 3862, 1868, and two cases, referred to me by Dr. E. E. Southard, which were not hospital cases.

9. The suggestion is made that the manic-depressive syndrome may be due to a perversion of function of certain parts of the central nervous system, possibly the thalamic centres, and that, contrary to Kraepelin's view, the symptoms of mania and depression may be due to opposite perversions of function.

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VARIATIONS IN THE SENSORY THRESHOLD FOR FARADIC STIMULATION IN PSYCHOPATHIC SUBJECTS.*

III. The Dementia Precox Group.

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The present paper deals with 51 cases diagnosed dementia precox, at the clinic of the Psychopathic Hospital, Boston, on which the sensory threshold for faradic stimulation has been determined by the Martin method.[3] In the first work done with this method in this clinic the results in this group were surprisingly clean cut and the following conclusion was drawn from a series of 135 cases of mental disease (21 cases of dementia precox[1]): "Interesting figures are available for cases of dementia precox, indicating that the paranoidal forms have a normal threshold, whereas those classed as catatonic and hebephrenic have pathologically high thresholds. It is remarkable that the hebephrenic cases tested (two in number) showed some of the highest thresholds calculable (760). Eight catatonic cases averaged 232 (paranoid 131)." These remarkably concordant results have not been borne out by further study of this group.

That this series should not afford results which, by a test which has so far proved physiologically valid, are of diagnostic value, is not surprising when one takes into consideration the polyglot character of dementia precox as described by Kraepelin.[9] Furthermore, we are dealing here with the group in which the margin of error of the Psychopathic Hospital diagnoses is the largest—as judged by the further progress of the cases at the state institutions to which they are sent. This error is about 20%,[4] and its size may be due in part to the fact that the other hospitals do not follow so strict a Kraepelinian grouping as is the case here. However, the very irregularity of the results will have some value as diagnostic evidence, and certain interesting observations as to the pathological physiology of dementia precox have been made. As to the latter, the more important deal with emotional tone and catatonic symptoms.

The method employed is that of Martin,[3] slightly modified as described in a former paper. The results are expressed in beta units, which are units of "shock" given. In using this method of notation the higher the value the less sensitive is the subject tested. The material consists of 90 observations on 51 patients. Of these 90 observations three proved to be invalid, due to lack of coöperation on the part of the patient tested. These were on different patients who at some other time yielded a valid result.

The lack of correspondence between the clinical observation of emotional tone and the sensory threshold for faradism is the most striking feature of this series (*cf.* Table I). This observation is the more remarkable in contrast to the results obtained in the manic-depressive syndrome (*cf.* Figure), where the depression was a distinct factor in raising the threshold. In this group an explanation for this was suggested[2] which was based on the histopathological evidence adduced by Southard[5] and Bevan Lewis (quoted by E. E. Southard[5]). It was suggested that the maniacal states of manic-depressive insanity might be associated with a "tissue-simplification," affecting among others the receptor system, and that the depressed states might, on the contrary, be associated with a "tissue-complication" affecting this same system. Obviously, this cannot be true of the dementia precox group, and we are forced to the conclusion that the emotional tone in dementia precox is

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* I wish to express my sincerest thanks to Dr. E. E. Southard for placing the clinical material at my disposal and for his invaluable help in reporting the results especially in suggesting the significant correlations.

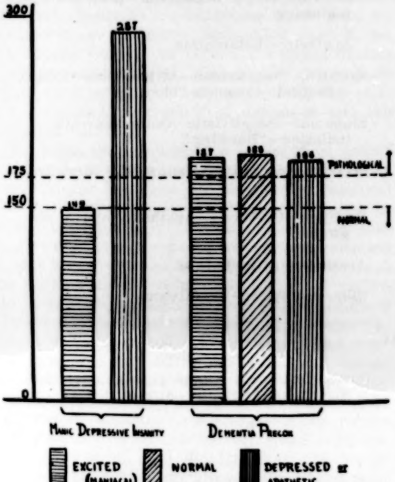
† Being Psychopathic Hospital Contributions Whole Number 69 (1915.6). (*Bibliographical Note.*—The previous contribution was by G. P. Grabfield (1915.5), entitled "Variations in the Sensory Threshold for Faradic Stimulation in Psychopathic Subjects: II. Manic-depressive Insanity," published in this issue of the Boston Med. and Surg. Jour., page 198.)

Table I.

Type.	No. Cases.	Male.	Female.	No. of Observations.	Limits of Variation.	Average Threshold.
Manic	12	10	2	16	61—777	187 *B* units
Depressed	30	20	10	52—3=49	72—743	186 "
Normal	9	6	3	22	73—518	188 "
Total	51	36	15	90—3=87	61—777	186 "

governed by a different mechanism than that which governs this process in manic-depressive insanity.

It is unfortunate that no definite results of diagnostic value have been brought out by this study. Of the entire series of 51 cases only 33% constantly yielded pathological values (over 175 beta units). Forty-eight per cent. showed a pathologically high threshold at some time. Thus 52% are found who have never shown anything but a normal threshold value, and 67% showed a normal value at some time. There were 21 cases who had more than one valid test made upon them. Of these cases only 9 (43%) showed at some time a pathological value. Although this group is not large, a consideration of the above figures seems to make it justifiable to conclude that only about 50% of the dementia precox cases show a pathologically high threshold, even when tested more than once. In this connection, it is to be remembered that the cases passing through this clinic are as a rule not far advanced.



The Figures Indicate Threshold Values In Beta Units

As to the value of the test in differentiating the types of dementia precox, as described by Kraepelin, the evidence at hand is not very satisfactory. However, the large variation of the values within the various groups makes it unlikely that this test will be of use in this direction.

In the consideration of this test from the viewpoint of differential diagnosis, one impression may be of value. Certain of the cases on repeated tests showed remarkable changes in the values obtained. This was more apparent the oftener the cases were tested. The interesting point about these changes was that they did not seem to follow any fixed rule nor were they capable of correlation with any clinical observation of the condition of the patient. In all other groups studied the values on repeated observation remained about the same or varied as the clinical picture varied. The only group in which anything similar has been observed is the Korsakoff cases. The data at present available on this point are very meagre, but it seems to be a line of investigation worth following.

A consideration of the cases showing a threshold value of over 200 Beta units at some observation (*cf.* Table II) brings out the fact that a very large fraction of these cases show symptoms of catatonia and somatic delusions. Fifteen such cases were found and of these 67% showed catatonic symptoms and 47% showed somatic delusions. Certain authorities[10] deny the possibility of dementia precox without hallucinations. From two cases in this group no hallucinations were elicited. One case (No. 19263958) was markedly alcoholic, and it is probable that his hallucinations were due to alcohol. If these three cases are omitted from consideration, we are left with 12 cases in which the diagnosis of dementia precox is highly probable and who at some time showed a threshold value of over 200 beta units. Of these 12 cases, 67% showed symptoms of catatonia and 42% showed some somatic delusions. Southard[6, 7] has correlated the symptoms of catatonia with post-rolandic cortical lesions, *i.e.* lesions in the sensory "arrival-platforms." He has also advanced the view, from evidence obtained at necropsy, that somatic delusions have their basis in fact perverted possibly by a disturbance of the receptor mechanism.[8] The parallelism between these symptoms and high sensory thresholds, in view of the post-mortem findings, is suggestive.

A consideration of the cases showing at some observation a threshold value under 100 beta units revealed a remarkable dearth of catatonic symptoms and somatic delusions (*cf.* Table III). Nine such cases were found. Of these, 33%

showed symptoms of catatonia and 11% showed somatic delusions, and 22% showed delusions which may possibly be classed as somatic. Eliminating from this group the cases from whom no hallucinations could be elicited and one case (No. 3583) whose hallucinations were probably due to alcohol, we are left with six cases in which the diagnosis of dementia precox is highly probable and of which 17% (1 case) showed catatonic symptoms and these only of the vaguest kind. Seventeen per cent. showed somatic delusions and 33% showed delusions of

TABLE II.

Case No.	Hallucinations.	Delusions.	Symptoms of Catatonia.
2046	Aud. and vis.	Grandeur—Reference. Persecution (?)	Attitudinising.
3594	Aud.	Reference—Persecution	Attitudinising—Grimacing. Negativism—Resistivism.
3827	Aud. and vis. olfactory	Reference—Persecution	Apathy—Retardation.
1837	Aud. and olfactory	Persecution—Somatic	0
3314	"Ringing in ears"	Reference	0
1926 3958	Aud.	Somatic (?)	0
1829	Vis.	Somatic.	Negativism—Resistive.
4001	0	Somatic	One outbreak——negativism—Resistive—Attitudinising.
2718	Aud. and vis.	Reference—Persecution	Apathetic—Retardation.
3552	Probable	?	Resistive—Negativistic—Attitudinises—Erotic —Bashful—Complete "blocking."
2078	Aud. and vis.	Somatic—Apprehension	Stuporous—Negativistic—Outbreaks—Attitudinsing—"Blocking."
4422	Aud.	Somatic—Reference (?) Persecution (?)	Secretive—Seclusive—Mannerisms—Resistive.
4316	?	Persecution—Somatic Self-condemnation	Resistive—Outbursts—Apathetic, almost stuporous.
2855	0	0	Apathetic—Attitudinising.
1109	Aud. and vis.	?	Silly—Outbursts—Negativism.

TABLE III.

Case No.	Hallucinations.	Delusions.	Catatonic Symptoms.
2121	0	0	Cerea flexibilitas—Outbreaks—Mannerisms—Negativism—Silliness—attitudinising.
3583	Visual	0	0
3952	Auditory	0	0
3678	Auditory	?	0
3900	Vis. and Aud.	Somatic — "Somebody influencing him by mesmerism or hypnosis."	0
1932	Visual	Somatic(?)—Grandeur(?)	0
3921	0	Persecution—Reference	Negativistic.
3751	Vis. and Aud.	"Being hypnotised" Somatic(??)	Playfulness with grimacing. Quite maniacal.
2397	Auditory	"House is haunted"	Silliness—Laughing—Occasional talk tack —Untidy—Always tired.

TABLE IV.

Type of Case.	No. of Cases.	No. of Observations.	Limits of Variation.	Average Threshold.
No hallucinations noted	24	42	73—518	164 *B* units
Visual hallucinations alone	4	7	124—743	233 "
Auditory hallucinations alone	10	14	61—190	121 "
Tactile hallucinations alone	1	1		169 "
More than one kind	10	21	72—512	224 "
Recorded as "Vague Hal."	2	2	309—777	543 "
Total hallucinated cases	27	45	61—777	208 "
Not deluded	15	25	73—777	240 "
Deluded	36	62	61—512	161 "
Both halluc. and deluded	21	35	61—512	161 "
Neither halluc. nor deluded	7	13	73—202	126 "

a vaguely somatic character. One of the cases excluded was a case of dementia precox which all agreed was of the catatonic form, and the stupor in which this case was throughout his stay in the hospital (No. 2121) may account for the failure to elicit either hallucinations or delusions. Thus in the group showing a low threshold value we find that only 17%-33% showed symptoms of catatonia and 11%-50% showed somatic delusions.

No relation could be traced with hallucinations nor with the various types of hallucinations (*cf.* Table IV). Delusions other than somatic were so variously designated that it did not appear feasible to record the types of this symptom as mentioned. Other than the somatic before mentioned, there appears to be no relation between the presence of delusions and the threshold value.

We have, then, found in a series of 51 cases[*] diagnosed dementia precox, that the sensory threshold for faradism quantitatively measured does not afford results of diagnostic value in nearly two-thirds of the cases, that the concordant results of the first group of cases studied in this way are not sustained by this series, that the parallelism between high threshold values and catatonic symptoms and somatic delusions is suggestive in view of the evidence in regard to these symptoms, which has been found post mortem, that the correlation between the lowest threshold values and lack of these symptoms strongly supports the previous correlation, that the types of hallucinations and delusions (other than somatic) could not be connected with the threshold values, and finally that the irregular variations of cases repeatedly tested may have a significance diagnostic or otherwise which would be worth investigating. In conclusion, it is again to be noted that, even though the results of this series have not lead to conclusions of diagnostic value, certain observations as to the pathological physiology of the central nervous system in dementia precox have been afforded by the quantitative determination of the sensory theshold for faradism.

CONCLUSIONS.

1. The determination of the sensory threshold for faradism shows that pathological values are constantly obtained in only about one-third of the cases of dementia precox and hence that this determination is of diagnostic value only in this percentage of cases.

2. The mechanism governing emotional tone in dementia precox appears by this test to be different from that which governs this phenomenon in manic-depressive insanity.

3. The correlation of catatonic symptoms with high threshold values parallels the correlation between these symptoms and post-rolandic cortical lesions. From this it is probable that the "arrival platforms" for faradic stimuli lie in the post-rolandic region.

4. The correlation between somatic delusions and high threshold values is evidence in favor of the suggestion that these delusions are associated with a perversion of the receptor mechanism.

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[*] The case numbers are: 292, 1109, 1829, 1837, 1926 (3958), 1930, 1932, 2046, 2056, 2058, 2078, 2079, 2121, 2154, 2178, 2336, 2347, 2354 2369, 2397, 2715, 2718, 2855, 2851, 3314, 3539, 3552, 3583, 3594, 3644, 3678, 3724, 3751, 3760, 3764, 3882, 3900, 3921, 3948, 3952, 3984, 3991, 4001, 4145, 4164, 4277, 4316, 4321 (4205), 4330, 4334, 4422.

Reports of Societies.

CLINICAL CONFERENCE OF THE NEUROLOGICAL INSTITUTE, NEW YORK.

REGULAR MEETING, APRIL 22, 1915.

DR. J. RAMSAY HUNT, in the Chair.

GLIOMA OF FRONTAL LOBE, WITH NOTES ON ASPIRATION OF THE BRAIN FOR DIAGNOSTIC PURPOSES.

DR. PEARCE BAILEY AND DR. CHARLES A. ELSBERG presented the following case as a contribution to the symptomatology of frontal tumors, and also because positive diagnosis as to the approximate site and exact nature of the tumor was established during life.

A civil engineer, aged 50, had been actively engaged in his profession until Feb. 1, 1915. At that time, when called upon to give an expert opinion regarding bridge building before a commission, he was unable to express himself in a way that the commission could understand him and was released as a witness. A few days after this, he awoke early one morning with an attack of vomiting. At about the same time he began to complain of dull pain through the centre and base of the head. Up to this time he had been a perfectly healthy and normal man, but from this time onward he became more and more incapacitated, largely by reason of his mental symptoms.

Mental Symptoms. These in the first instance consisted in the so-called Witzelsucht. He would burst out laughing when the simplest question was put to him, and if he tried to answer it, the answer would be accompanied with explosive laughter. He also became very profane in his remarks, which was quite contrary to his previous custom. Associated with this condition was a certain amount of hebetude, which deepened as the case progressed. At first he would be merely inattentive and not particularly talkative, but later he would sit for hours without paying attention to what went on about him and without volunteering any remarks at all. He gave up reading almost altogether, although he could read, could understand what he read, could write, and had no definite symptoms of aphasia, although he occasionally made a misuse of words. There was no apraxia. An indication of the mental hebetude was furnished early in the disease, by lack of care of his person. He would void urine in his clothes or in bed and would make no effort to remedy or call attention to the accident. Later in the disease, on several occasions there was the same trouble with the bowels. These disturbances were not the result of any sphincter trouble.

Eye Symptoms. The only trouble with the ocular apparatus was a slight swelling of both discs, mostly on the right side. This was hardly enough to merit the term "papillitis," and increased only moderately while he was under observation. The direct compression symptoms described by Kennedy in regard to frontal tumors was absent.

Other Cranial Nerves. The cranial nerves were normal wth the exception of a slight weakness of the left face and a slight deviation of the tongue to the left. These were never pronounced, and if they had not both been on the same side might almost have passed as normal physiological variations.

Motor Symptoms. With the exception of the anomalies of the face and tongue, just mentioned, there were no motor disturbances. There were no paralysis, no tremors, no incoördination. Patient could walk, use his hands, and retained his strength.

Reflexes. The deep reflexes presented strange anomalies. At times the knee jerks would be almost absent, and at other times hyper-active, without any apparent cause to account for these changes. At one time the left Achilles jerk disappeared, to return again and become normal.

X-ray Findings. A large number of radiographs were taken of the skull and of the cranial sinuses, without revealing any facts which had bearing on the cerebral condition.

Serological Examinations. Both blood and cerebrospinal fluid were negative to the Wassermann reaction, the former was also negative after a provocative Wassermann test. The cerebrospinal fluid contained 16 cells and an excess in globulin.

Clinical Evolution. Before the operation, the patient was under observation about five weeks. During this time there was a progressive involvement of mentality, so that the original Witzelsucht merged into a general condition of hebetude. There was no persistent vomiting, but toward the end of the period of observation the patient vomited several times. The carelessness about his person increased. It was difficult to tell whether or not he suffered pain, as he did not express himself freely, but the nurses thought that at times he had considerable headache. The only evidence of increase in intracranial pressure was a slight increase in the swelling of the optic nerves.

Diagnosis. The patient was running down hill so persistently that it became necessary to determine promptly the nature and position of the disturbance, which was plainly intra-cranial. The absence of any specific disease or of any vascular disease, made a diagnosis of localized intra-cranial trouble almost certain, and the predominating mental character of the symptoms, the practical absence of all other symptoms referable to focal regions, seemed to indicate the frontal lobes as the seat of the disturbance, although it was impossible to tell on which side of the brain the disturbance was. The choice as to the nature of the disturbance seemed to lie between an abscess and tumor, and to determine these two points, which could hardly have been determined in any other way than by exploration, exploratory interference was undertaken.

SURGICAL NOTES.

DR. ELSBERG: We considered it advisable to do an exploratory puncture over both frontal lobes, rather than in the beginning to do a large exploratory operation. Inasmuch as it was impossible to say with certainty whether the disease was in the right or left frontal lobe, we determined to aspirate these regions for diagnostic purposes. The typical Neisser puncture we considered inadvisable because of the danger of injury to the pial vessels. The following procedure was, therefore, adopted:

Under ether anesthesia and through a small incision over the right frontal lobe a button of bone was removed, a small incision in the dura made and the frontal lobe punctured in several directions. No fluid was obtained; the small cylinders of brain tissue obtained were preserved for microscopical examination. The same procedure was repeated on the left side. The brain tissue obtained from the right side was of very soft consistency, while that of the left was much more firm. The buttons of bone were returned into place and the small scalp wounds sutured.

The patient recovered from the operation without incident.

The pathological report was: Tissue from the right frontal lobe—normal; tissue from the depth of the left frontal lobe—glioma of the infiltrating type.

REMARKS.

By this simple procedure, it was possible to make the diagnosis of irremovable tumor of the left frontal lobe and to save the patient a more extensive operative procedure. I have made use of this procedure in a number of instances and have found it of the greatest value. As above stated, I consider the Neisser puncture dangerous, but the method here described is practically non-dangerous, because through the small opening in the skull and dura a portion of the brain free from blood vessels can be selected for the puncture. By this method of diagnosis it is possible to locate an otherwise unlocalized growth and to determine the nature of that growth or to discover the location of an abscess. The microscopical examination of the small cylinders of brain tissue removed by the needle will tell one not only whether disease is present, but the nature of that disease, and in a number of instances I have been able to find the disease, to determine its nature and to come to the correct conclusion as to its operability by this method. I have been able to save unnecessary and useless operative procedures, and, on the other hand, have made more certain my indications for operative interference in removable growths. The method deserves far more extensive use than it has had heretofore.

CASE OF CHRONIC PROGRESSIVE CEREBELLAR TREMOR WITH ARGYLL-ROBERTSON PUPILS.

Dr. Henry K. Marks presented from the First Division the case of a tailor, married, 67 years old. His family history is quite negative. At the age of eleven he had a traumatic infection of the left hand. About the same time there occurred what was apparently an osteomyelitic affection of the right shin, which persisted for a number of years. At the age of 22 he contracted gonorrhea. Syphilis is denied. His wife, a healthy woman, has been childless. There have been no miscarriages.

Always a temperate man, he enjoyed excellent health, never missing a day's work up to twelve or thirteen years ago. From this time dates his present illness. While riding to his work one morning, without premonitory symptoms of any sort, he suddenly felt a sharp, stinging blow just beneath the occiput. He was dazed, perhaps even unconscious for a few seconds, fell back in his seat and was unable to articulate distinctly. Friends supported him to his shop. He walked as if drunk, reeling from side to side. The following day he went to work as usual. He felt rather weak but his gait was now natural. He noticed, however, that his speech was disturbed, stuttering as he described it, but without any aphasic element. This cleared up entirely within a couple of days.

The next two weeks, except for an indefinite feeling of weakness and an occasional mild dizzy attack, were uneventful. Then he noticed that his hands, particularly the right hand, were beginning to grow unsteady, to shake while at work. The tremor, slight at first, has since then slowly but steadily increased, occurring at rest, though to a much less extent as well as on movement. Up to a month ago, however, he was still able to thread a needle and sew.

Other symptoms which have appeared since the onset of the illness are an alteration of his speech, first becoming noticeable a few months after the appearance of the tremor; a shaking of the head of four or five years' duration; a weakness of his legs of one year's duration to which shakiness, as on stooping, has been added during the past three months. All these symptoms have shown a slow, gradual progressive course.

In his boyhood he suffered from periodic headaches of a migraine type, but since the age of fourteen or fifteen he has been quite free from headaches of any sort. For the past year or so he has had an occasional mild attack of dizziness. His memory shows no gross impairment; for two years or so, however, he has had less emotional control. His special senses—eyesight, hearing, etc., have not been affected. His general health is very fair. He eats and sleeps well and has good sphincter control.

Physical Examination. The patient is a short, stocky man of flabby musculature. His serum Wassermann is negative. His blood pressure is 160; his urine shows a trace of sugar. Otherwise general examination reveals nothing noteworthy.

His pupils are pin point in size, the left slightly greater than the right. They give no reaction to light, but converge well on accommodation. Ocular movements upward and downward are, perhaps, somewhat restricted. Other abnormalities are lacking. He shows defective voluntary control over the corrugator and frontalis muscles, the left angle of the mouth sags a little, but there is no definite evidence of seventh nerve involvement. His tongue is protruded straight, is tremulous and shows a tendency to be drawn in and out of the mouth. Otherwise the cranial nerves are negative.

His musculature is flabby, range of movement in all the joints except for traumatic restriction of the left index finger, is normal. There is no hypertonia. Power is very fair, quite proportionate to the muscular development.

His arm reflexes are present, equal; his knee jerks active, the right slightly greater than the left; the ankle jerks are present and equal. Plantar stimulation gives a flexor response, Babinski, Oppenheim and clonus are absent. The epigastric and abdominal reflexes are present, though sluggish. Sensation both superficial and deep, shows no disturbance, whatever.

A casual glance at the patient reveals his striking and essential characteristics. I refer to a constraint, a fixity of his facial and body expressions and to his tremor. His face has a mask-like quality, his head is lightly flexed on his chest, his shoulders stooped. He carries his limbs close to his body. His movements are all slow.

Standing, his whole body is seen to be agitated by a tremor. His head nods, his lips tremble, his arms show an up-and-down excursion from the shoulders, his chest and abdomen show a fine longitudinal movement, with something of a rotatory character added and a slight tremor occurs in the legs, especially in the region of the knees. The oscillations are not continuous nor perfectly rhythmic, and vary from 80 to 140 per minute. At times, when the patient is perfectly quiet and does not feel himself observed, the tremor may practically disappear. It is increased by exertion and emotion. Sitting tends to decrease the tremor and lying down even more so.

The hands with arms at rest usually tend to assume the pill rolling attitude, but the tremor itself is, as a rule, slight. With the arms outstretched a coarse longitudinal and rotatory tremor of the hands occurs, which is even further increased on raising the arms above the head. The right arm is somewhat more affected than the left. Initial movement tends to decrease or even to stop the tremor, sustained effort to increase it. In the finger-nose test we detect no ataxia, no dysmetria in the sense of over-reaching, but a tremor of the intentional type. It begins toward the close of the act and becomes so marked and intense that a sustained position is impossible. Alternating movements are slowly and clumsily performed and the rhythm is quickly lost. In the legs slight oscillations occasionally occur toward the close of the heel-knee test. Ataxia dysmetria and asynergia are absent.

There is no Rombergism in the strict sense. Instability increases on closing the eyes, but this is apparently due to increases of the tremor.

The patient's gait is somewhat broad based with a slight waddling tendency. It is not of the *petit pas type* nor propulsive. His vertebral column is rather rigid as a whole.

REMARKS.

We have, then, the history of a slow progressive tremor of thirteen or fourteen years' duration. General symptoms of cerebral disease are absent, likewise symptoms referable to the vestibule apparatus. How are we to regard this case? Obviously there are certain superficial resemblances to Parkinson's disease. Various objections may be raised; the mode of onset of the disease, the absence of muscle hypertonia, the fact that the tremor at rest is least marked or may be wanting altogether while it is invariably increased under dynamic conditions, that tremor of the intentional type is present, that the gait is in no wise characteristic. Granted that these deviations may be regarded singly as merely atypical and granted that all of them may have been recorded in cases considered Parkinson's disease, still in their totality they are significant. The suspicion against Parkinson's disease is further increased by the Argyll-Robertson pupil.

Our knowledge of the pathology of paralysis agitans is still too obscure to allow us to venture an assertion as to the seat of the disease. The recent work of Wilson on progressive lenticular degeneration has turned the attention again to the basil ganglia. But the basil ganglia have an intimate connection with the cerebellar tracts. On this hypothesis is it unreasonable to suppose that a disease process interrupting these connections will not produce a disease picture resembling more or less Parkinson's syndrome? In other words, have we not to do in this case with a lesion somewhere along these connecting tracts?

The patient as I conceive it is a syphilitic. The sharp stinging blow he felt in the occiput thirteen years ago was a vascular accident, probably a thrombus occurring on a syphilitic basis in the cerebellum. The initial symptoms, you may remember, were slow stuttering speech and a reeling gait. The symptoms were short-lived followed by the group above recorded. Among them we may still find a cerebellar component in the tremor of the intentional type, the broad-based gait with its suggestion of reeling, the slowness and awkwardness of alternating movements, the slow and labored speech. Whether the lesion be an inflammatory one or a bilateral systemic one, as in posterior column degeneration, which seems the more probable, we cannot, of course, definitely say.

In many of its aspects, the case resembles a type of progressive cerebellar tremor described by Dr. Ramsay Hunt (Brain, 1915). This affection is characterized by the gradual progressive development of intention tremor, associated with dyssynergia, dysmetria, asthenia of intermittent character and slight hypotonia. (The dyssynergia cerebellaris progressive.)

INTENTION TREMOR OF THE LEFT ARM ASSOCIATED WITH CHORIEFORM MOVEMENTS, DEVELOPING DURING PREGNANCY.

Dr. Robert E. Pou presented from the Second Division, an American Jewess, thirty years of age, with the following history: She was entirely free of her present affection until her 27th year, and with the exception of measles, gave no history of previous disease. Menses began in her thirteenth year, stopped until the seventeenth, and since then have been normal. A search into the family history reveals nothing of importance, except the fact that she has a brother 35 years old who was always weak-minded, and who has been in the Manhattan State Hospital since his nineteenth year. At that place he is considered an imbecile, and is declared to be free of any physical neurological symptoms. About the age of 21 the patient contracted an illicit union with a man to whom she bore two "instrumental" children. The first of these, born six years ago, died at the age of six weeks, probably of tuberculosis. The second is a healthy boy of five years. During her second pregnancy, the patient received an accidental blow in the small of her back, which, however, did not interrupt the pregnancy, and was not followed by any untoward symptoms.

The present illness dates back three years, when the patient noticed the gradual onset of cramping, aching pains in her left arm, not constant, but coming on every three or four hours, and lasting for a few minutes at a time. After two or three weeks of these pains she began to have involuntary movements in the left arm and hand, increased by purposive motion. She went to the Lying-in Hospital, where a diagnosis of acute chorea was made. She now felt tingling sensations in her left face, arm, trunk and leg, accompanied by a subjective weakness in the left side.

The patient was sent to the Neurological Institute at this time, being then in the fourth month of pregnancy. She showed a peculiar, rhythmical, choreiform tremor of the left arm and hand, made distinctly worse by efforts to coördinate. This tremor was accompanied by a choreiform twitching of the mouth, and a hesitating, explosive speech. The right hand and arm were normal. Knee jerks and ankle jerks were equal on the two sides. There was a suggestion of hypaesthesia in the left side, but the meager intelligence of the patient left this in doubt. Dr. Holden found the pupillary reaction good in a bright light, but sluggish when the light was thrown in by a mirror. The pupils were equal, the mobility of the eyes was normal, and the vision as well. There was no nystagmus, and the fundi were normal. Excessive concentric contraction of the color-fields was noted, and at times, uniocular diplopia. The left cornea was slightly anaesthetic. Dr. Holden thought the findings suggested hysteria. The Wassermann was negative.

The patient returned to the Lying-in Hospital in May, 1912, where her uterus was emptied of a macerated fetus, the age of which was not estimated. A blood count showed 4,240,000 red cells, 80% haemoglobin. Numerical white blood count not made. Differential white count normal.

Within the last three years the patient has been seen regularly at the Institute, and her condition has undergone but little change, except an additional tremor of the right hand, seen only at times, and never increased by purposive movement. She also complains at times of "sticking" sensations in the right arm. A year ago she was married to the father of her children, and has since had two inevitable abortions at about the third month of pregnancy.

A recent examination reveals a small, pale, undernourished woman, thin almost to the point of emaciation. She walks with a peculiar, somewhat choreiform gait, and shows a coarse, bilateral tremor of the arms and hands, much more marked on the left side. The right hand can be well coordinated, but the left tremor is greatly increased by purposive motion. Much of the time the right-handed tremor is not seen, but that of the left arm and hand is constant except during sleep, when all the tremors cease. It is fairly rhythmical, about three to the second, and so continuous that the patient tries to overcome it by grasping the left hand between her knees, or holding it with her right. Combined with these tremors of the hands is a choreiform movement of the mouth, while her speech is hesitating and explosive. In the recumbent posture a fairly constant choreiform movement is seen in both feet, and associated movements are easily elicited.

There is no evidence of unilateral weakness of arm or leg, but a suspicion of weakness in the left face is noted. Adiadokokinesis in both arms. No fibrillations, no nystagmus.

The deep reflexes are generally increased, the right knee jerk being slightly more marked than the left. A moderate clonus, seen in both feet, is quickly exhaustible.

Among the skin reflexes the epigastrics can be only faintly elicited, the abdominals not at all. As to the plantar reflexes, it is difficult to decide, as the reaction is obscured by the choreiform movement of the toes. While the Babinsky reaction is uncertain, there is a fairly constant Oppenheim and Gordon, and a crossed extensor reflex is occasionally seen in the right big toe.

Dr. Holden finds the eyes about as they were three years ago: Vision and fundi normal; marked concentric contraction of the color-fields, and at times, a uni-ocular diplopia. Pupils slightly sluggish to reflected light, but react promptly to a bright one.

Pharyngeal reflex normal. With the exceptions above noted, the cranial nerves are normal.

There are no sensory changes, no astereognosis. The back is flexible, and not tender, there are no deformities, no trophic disturbances, no change of tonus, no mechanical restrictions. There is no change in emotional innervation of the facial muscles; and, while the patient is apt to weep at the recital of her domestic wrongs, there is no forced crying or laughter.

Dr. Kaplan finds a positive Wassermann reaction in the blood. The spinal fluid is negative.

Heart and lungs negative.

The posterior cervical chain of glands is distinctly felt, small and "shotty."

REMARKS.

This case has been thought to be of interest because of the somewhat atypical character; the peculiar tremor, the intentional element of which is wholly confined to the left arm, where it is very marked; its non-progressive course; the absence of definite remissions; and in sum, its difficulty of diagnosis. The nature of the onset and the probable existence of lues strongly suggest a vascular lesion of syphilitic nature, located somewhere in the cerebello-rubro-spinal tract.

Oppenheim reviews the subject somewhat as follows: Hemichorea and hemiathetosis have so often followed lesions of the optic thalamus that they were at one time assigned to that region. On the other hand, experience seems to prove that not alone lesions of the pulvinar, but excitations of the neighboring pyramidal tract are responsible for the phenomena. Eventually the hypothesis was advanced that affections of the motor cortex and lesions in close proximity to the motor tracts also gave rise to these symptoms. Charcot and Raymond found the lesion in one case in the internal capsule. The followers of Kahler and Pick, however, attribute the phenomena of hemichorea and hemiathetosis to lesions of the central thalamic nucleus, the lenticular nucleus, the sub-thalamic region, the red nucleus, the anterior cerebellar peduncle and cerebellum. Monakow conceives in such cases a continuous excitation in the thalamus and mid-brain of those centripetal fibers whose destination is the motor cortex. Anton suggests an antagonism between the optic thalamus and lenticular nucleus, and ascribes to the latter body an inhibitory influence on automatic movements. Destructive lesions of the lenticular nucleus and its outgoing inhibitory tract would, therefore, allow the untrammeled play of involuntary impulses from the thalamus. Bonhöffer and others locate the causative lesion among those fibers which pass from the cerebellum to the thalamus by way of the brachium conjunctivum, and then to the cerebral cortex. Some observers modify Bonhöffer's theory by raising the question whether the phenomenon be one of stimulation or destruction of the tract. Halban and Infeld seek to reconcile the theories of Anton and Bonhöffer. Wilson and C. Vogt have both reached the conclusion that the corpus striatum exercises an inhibitory influence upon the cortico-spinal tracts, and that it does so through the medium of the lenticulo-rubro-spinal system.

Oppenheim himself sums up as follows: Such post-hemiplegic results as hemichorea and hemiathetosis may be called forth by direct or reflex excitation of the automatic motor centers in the optic thalamus.

1. By small lesions which lie in the thalamus and act as excitants.
2. By the injury to those sensory fibres which pass from the cerebellum to the thalamus by way of the brachium conjunctivum.
3. By interruption of inhibitory impulses passing out of the corpus striatum and lenticular nucleus.
4. By cerebral accidents of childhood which damage the motor cortex, thus bestowing an unwonted freedom upon the involuntary motor centers in the thalamus.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting of Wednesday, April 7, 1915, at 8 p.m.

The President, Dr. James C. Wilson, in the Chair.

SARCOMATOUS DEGENERATION OF A FIBROMA OF THE UTERUS FIVE YEARS AFTER X-RAY TREATMENT FOR PRESSURE AND HEMORRHAGE.

Dr. George Erety Shoemaker: The treatment of fibromata of the uterus by non-surgical methods is a subject of such importance that all data upon the subsequent behavior of such growths should be carefully recorded. Of peculiar importance is the question whether the sarcomatous or other forms of malignant degeneration are less liable to occur after treatment by the x-ray or radium, or whether they occur at all. While no exact percentage can be given, sarcomatous degeneration is a definite risk in untreated fibroma of the uterus. Certain writers have argued that after x-ray treatment no cases of malignancy have been observed. It is obvious, however, that not until the end of a patient's life can it be stated that malignant degeneration will not occur.

The patient whose history is recorded was known to me through conference with her physicians for many years. She finally developed sarcoma in a fibroid tumor about seven years after x-ray treatment was begun, and five years after it was stopped. The patient, who is now 56 years of age, underwent at my hands nineteen years ago an operation for laceration of the perineum in consultation with Dr. John H. Musser. She then had no tumor. She was not seen again until April, 1914, when she was referred for operation. I removed a large tumor, which proved to be a sarcomatous degeneration of a multiple fibroid of the uterus. A very smooth recovery followed abdominal hysterectomy. One year after the operation she reports herself entirely well. It is the complications of fibroid tumors which render them important. In the study of end-results time is necessary. That treatment is indicated which best eliminates the complications as well as the tumor and which preserves, if possible, sexual characteristics. This treatment in a large proportion of cases is surgical.

Dr. John A. McGlinn: We must acknowledge that fibroid tumors of the uterus can be cured by x-ray therapy and that the method has a very important place in the treatment of neoplasms. Whether the treatment can entirely replace surgery is problematical. Hysterectomy for fibroids has a definite mortality. In the hands of the trained gynesic surgeon I believe this mortality is not over 1½ to 2%. According to the statistics of Mayer the x-ray causes the entire disappearance of a tumor in comparatively few cases. While statistics may be quoted showing that cases treated by the x-ray have not shown late degenerative changes, Dr. Shoemaker has reported a case tonight in which such change occurred, and other cases are known, both published and unpublished. I believe that at the present time surgery is the best treatment for fibroid tumors of the uterus, unless the patient is in such a condition as absolutely to contraindicate its use.

Dr. Shoemaker, closing: During one month this winter I successfully did hysterectomy for four fibroids complicated with large cysts or large pelvic abscesses. This illustrates that the complications are often very formidable and that they are very common.

A SYMPOSIUM ON NATIONAL HYGIENE.

THE ORGANIZATION AND ACTIVITIES OF THE INTERNATIONAL HEALTH COMMISSION.

John A. Ferrell, M.D., Assistant Director-General, International Health Commission: At the suggestion of the chairman of your committee on public health I shall attempt to outline the development of the International Health Commission. The commission was created in June, 1913, by the Rockefeller Foundation for "The promoting of public sanitation and the spread of the knowledge of scientific medicine." Its immediate task contemplates the extension of measures for the relief and control of uncinariasis or hookworm disease to those countries and peoples where conditions invite. Active measures are in progress in several territorial units in the Southern States, Central America, the West Indies, British Guiana, in South America, and Egypt; and other countries have signified a desire to have the coöperation of the International Health Commission. This commission was the natural outgrowth of the Rockefeller Sanitary Commission, organized by Mr. John D. Rockefeller in 1909, and granted a million dollars to be used during the ensuing five years toward the eradication of hookworm disease in the United States. This commission was composed of thirteen of the country's leading educators, physicians and business men. Mr. Wickliffe Rose was selected as administrative head of the work. The State Board of Health of each state was selected as the agency through which to undertake the work. Eleven states invited and received the coöperation of the commission. The educated public soon began to regard hookworm disease as a problem worthy of serious consideration. The disease was found to exist among from 10 to 90% of the people. By the close of 1914 the number of persons in the South microscopically examined was 1,273,350. The number treated and reported, 694,516. Of 12,305 persons in twelve communities, 75% were examined; 26% were found infected; and 94% of these were treated and probably cured. Twenty-nine per cent. of these were actually re-examined after a course of treatment and all found to be cured. In these communities there were 2257 homes. Fifty per cent. of them in the beginning had no kind of a privy and those present were seldom ever sanitary. When the work closed 88% of the houses had privies, and 81% were of an improved type. This intensive work has been carried one step further in British Guiana by the International Health Commission, under Dr. H. H. Howard, director for the West Indies. There are two staffs at work, under the general supervision of the surgeon-general, a sanitary, and a medical staff. The sanitary staff, financed by the government, enters the area first. When this staff completes its work it moves to another area, leaving in the district sanitary inspectors, employed permanently by the government, to insure the maintenance of the improved sanitary conditions. The medical staff, financed by the International Health Commission, aims at the examination of every person in the working area, and the treatment until cured of every person found infected. Both staffs have made admirable successes and there is promise of wider application. The Rockefeller Sanitary Commission accomplished all that was expected by its founder and paved the way for the International Health Commission. In considering this larger work, Mr. Rose in 1911 set to work to collect, from all countries of the world, the available information on the distribution and prevalence of hookworm disease; the extent to which it was a handicap to the health and working efficiency of the people, the agencies at work toward its control; the results secured; and the methods employed. Ths results of this study indicated that the disease prevails in a belt of territory encircling the earth for thirty degrees on either side of the equator, inhabited by more than a thousand million people; that "the infection in some nations rises to nearly 90% of the entire population"; that the disease has probably been an important factor in retarding the economic, social, intellectual, and moral progress of mankind; and that "little or nothing is being done toward its arrest or prevention." In August, 1913, Mr. Rose went to London on invitation, with a view of establishing work in the English dependencies. The English government pledged its active coöperation in the work, and appointed an advisory committee to coöperate with the commission in the colonies, and the British West Indies appeared to all the logical region for beginning work. Barbadoes, Trinidad, British Guiana, Grenada, St. Vincent, St. Lucia and Antigua were visited by Mr. Rose. In 1914 he gave special attention to Egypt, Ceylon, the Federated Malay States, and the Philippine Islands. Dr. J. H. White was secured for a year from the U. S. Public Health Service to establish the work in certain of the Latin-American countries. In the West Indies Dr. H. H. Howard is now directing the work. Dr. Victor G. Heiser of the U. S. Public Health Service is to give general supervision to activities started in Egypt, and immediate direction to the extension of the work to other countries of the East as conditions favor. The work of the present year will cost the commission approximately $400,000, which amount is supplied by the Rockefeller Foundation. Mr. Rose, the director-general, is open to suggestions regarding other fields of activities to be entered by the commission. I think I shall violate no confidence in saying that he has been giving considerable thought to the training of workers in preventive medicine. He recognizes also the pressing need in many countries of facilities for the care of the sick. The attack on hookworm disease has led to the consideration of a similar attack on such diseases as yellow fever or malaria. Other fields may open offering more fruitful effort in accord with the paramount aim of the commission, which is to help the countries to help themselves in bringing into activity their own working agencies with their own resources.

THE RECENT HEALTH MOVEMENT IN THE UNITED STATES, WITH SPECIAL REFERENCE TO INFANT WELFARE WORK.

By DR. JOSEPH S. NEFF.

DISCUSSION.

DR. A. C. ABBOTT: It is startling to realize that in an area of 30 degrees north and south of the equator, and encircling the world there resides a population of about 100,000,000 people, approximately 90% of whom are suffering from parasitic ailments that rob them of their efficiency. To bring the matter more nearly home, the survey made by the Rockefeller Foundation of eleven of our own Southern states, with a total population of more than 2,000,000 of people reveals a like condition. Many of these people are incapable of effective work and thousands of the children are unable to profit by the education offered them. It is fortunate that the disease is easily cured, and that in the majority of instances it leaves no structural defect. Restoration to efficiency of this large part of our population must be looked upon as of the greatest economic importance. I am delighted that Dr. Ferrell has given us a chance to hear of the work of the International Health Commission, and I believe I speak for the college when I say that everything that lies in our power to forward that work will be gladly done.

DR. S. LEWIS ZIEGLER, Director of Health and Charities: I am much interested in the problem of the hookworm disease in the South presented by Dr. Ferrell, and the baby welfare problem in the North, discussed by Dr. Neff. I think Dr. Abbott has struck the keynote of the subject in his reference to it as an economic proposition, and this is the agument we have to use in order to secure funds for such work. The only thing that will bring about progress in the public health is a united community. I think any one convinced of the rightfulness of a question in which human life and health are involved will grant that which is necessary. The question of child hygiene is very close to all of us, and no one has done more in that direction, probably, than Dr. Neff. The problem is so vital that we should make every endeavor to demonstrate that our sole purpose is to bring about the greatest good to the greatest number.

DR. J. CLAXTON GITTINGS: Emphasizing some points concerning the infant welfare movement I may say that ignorance, and not poverty, is the chief cause of infant mortality; the properly selected and properly trained nurse, acting under proper supervision, who serves as the educator, adviser and counsellor of the poor upon matters related to health, is the logical cure for infant mortality; a division of the department of health devoted to child hygiene and employing an adequate number of nurses would aid largely in the reduction of this mortality. The chief causes of infant mortality are over-crowding, poor housing, poor hygiene and improper food. Poor housing and over-crowding are economic matters. When parents know the evil effects of these conditions they will move. Poor hygiene can be corrected. Improper food for the baby means improper preparation, and that means ignorance on the part of the mother. A series of evenings would be required to demonstrate what the nurse can accomplish in the education of the ignorant and superstitious mother in the care of the baby. It is the city's duty to conserve the health of its embryo citizens. I fear there are a few physician who look upon an attempt to ameliorate the conditions in the slums as Utopian. When we see the men and women who are making these problems their life study, and when we see the actual results in the reduction of infant mortality, the greatest skeptic must admit that the movement is past the experimental stage, that it is not an idealistic dream, but a feasible method for saving infant life, which has an almost infinite range of possibilities, dependent upon the extent to which the municipality aids and encourages.

MR. JOHN A. VOGLESON, Chief of the Bureau of Health: As I followed Dr. Ferrell's paper two distinct lines of endeavor in public health occurred to me: (1) Research work, which is of high importance; and, (2) work which more directly concerns the daily operation of the health department, namely, the practical application of knowledge already possessed, which was so well expressed by Professor Fisher in his careful analysis and report in 1908 on The Conservation of the National Vitality, when he said that the problem of prolonging life could be met to a great extent by the application of the knowledge already possessed by well informed persons of the medical profession, to a reasonable degree in a reasonable way. That is what we are trying to do in the Health Department of Philadelphia. In 1892 over 30% of our total mortality occurred in children under two years of age. At that time the children under two years of age represented 3½% of our population. In 1910 we had the beginning of our work in child hygiene in the Health Department as an organized line of endeavor. At that time the mortality for the year among children under two years of age was 25% of the total mortality, but they represented about 4% of the whole population. Passing through a shorter period to 1914, the mortality among the same group of children dropped to 20% of the total mortality, and they still represent about 4% of the whole population. In tuberculosis and diseases of the respiratory tract we have the next highest mortality. In the Bureau of Health today we are receiving an increasing coöperation by all classes of people. This is notably true in connection with the milk supply of the city. Our Child Hygiene Division began in 1910 with a small and devoted band of nurses, and without exception, every district to which a city nurse has been assigned has shown a lessened infant and general mortality.

DR. SENECA EGBERT: The first decade of the last twenty-five years represented a period almost of inertia upon the part of the laity and of the medical profession concerning public health. The second decade showed an awakened interest, and the last five years have revealed a remarkable activity on the part of the public and the profession. No one can predicate the economic results of the work outlined by Dr. Ferrell. We may all take much pride in the fact that so much of this work is in the hands of men of the American medical profession. We have reason to be just as optimistic in the matter of the reduction of infant mortality. Credit is due to every department of the Health Bureau for improvement in public health. The medical inspection of schools is under the direction of Dr. Cornell. Many do not yet realize the value of the new water system in the health of the city and that for the money invested we have a return of over ten million dollars annually in the saving of life, and health and money capitalization to the city.

DR. RANDLE C. ROSENBERGER: Infantile mortality, due to whatever cause, is the most vital question in child welfare. Were it possible that pregnant women might be excluded from occupations injurious to health and rest given to the mother before birth, or the establishment, as in France and Germany, of a law protecting the mother against want during pregnancy and the puerperal state, by financial aid up to six weeks, nursing money to the twelfth week, and medical aid given, it would be a glorious undertaking. It is claimed that in France since the establishment of motherhood insurance infantile mortality has decreased 50%. Education regarding the care of the child should be insisted upon. Girls should be given a course of instruction upon the care of children and in child hygiene fitting them to become teachers or mothers. The helpless child must be looked after by legislation and social endeavor. There should be coöperation of parents in the promotion of child hygiene. Recreation should be educational as well as a matter of amusement. Of the hygiene of the teeth too much cannot be said, and it must be remembered that facial deformity and nasal stenosis may be prevented, according to Bogue, by operations upon the temporary teeth of young children. It is claimed that 65% of feeble-mindedness is hereditary. Regarding the other 35% there seems to be a contrariety of opinion whether sterilization or segregation is the better means of treatment.

DR. FERRELL, closing: I count it a great privilege to be here this evening, and to hear the discussions that have been presented. We face everywhere the problem of funds adequately to conduct health work. We are endeavoring to determine what will constitute the smallest working unit. In the rural districts it may be a school district, perhaps a township. In the cities it may be only a block. If we can decide upon a plan of work effective for that small area, and determine the cost of the work for that unit we could have definite information to present to the people. After intensive work for a few months in the small area we could give to the people convincing information and show that to have the same benefits in larger measure it is only necessary to multiply such areas, and that for this funds would have to be forthcoming.

Book Reviews.

The Ductless Glandular Diseases. By WILHELM FALTA. Vienna. Translated and edited by MILTON K. MEYERS, M.D., Neurologist to the Lebanon Hospital, Philadelphia. With a Foreword by ARCHIBALD E. GARROD, M.D. (Oxon.) F.R.C.P., (Lond.) F.R.S. Physician to St. Bartholomew's Hospital, London. Philadelphia: P. Blakiston's Son and Company. 1915.

The work of Biedl in Germany, Naamé in France, and of Schäfer in England has already placed before the medical profession in accessible form a statement of our present knowledge on physiology of the endocrine glands and internal secretions. Schäfer's monograph on this subject was reviewed in the issue of the JOURNAL for June 3, 1915 (vol. clxxii, p. 830). Falta's elaborate work in German, dedicated to the great masters His, von Müller and von Noorden, presents similarly the pathology, clinical aspects and therapeusis of the ductless glands. It is based chiefly on observations made at the first medical clinic in Vienna. The present excellent translation by Meyers makes this important work for the first time available to English speaking physicians who have not a reading acquaintance with German. The translator has also added at the conclusion of nearly every chapter a valuable editorial comment, based on his personal reading and experience, in which he aims to present the views of other investigators and clinicians when they differ from those of Falta, and to summarize and coördinate all the data upon each aspect of the subject. The translation is on the whole flexible and idiomatic. The foreword by Garrod sketches the history of the study of the ductless glands from the time of Addison, who may be regarded as its founder. It also emphasizes the contributions of Claude and Gougerot on the subject of pluriglandular sclerosis. The text is presented in fourteen chapters, dealing respectively with general considerations, diseases of the thyroid, cretinic degeneration, diseases of the parathyroids, thymus, hypophysis, epiphysis, suprarenals, status lymphaticus and hypoplasticus, diseases of the sex glands, pluriglandular diseases, vegetative disturbances, diseases of the insular apparatus of the pancreas and the different forms of obesity and adipositas dolorosa. The book is abundantly and admirably illustrated with 101 figures; and, besides the references given at the close of each chapter, has an elaborate classified alphabetic bibliography of over fifteen hundred titles arranged in fourteen chapters. This volume, which should prove of the greatest interest and value to practitioners and students, is a monument of scholarship and clinical research.

The Individual Delinquent. A Text-book of Diagnosis and Prognosis for all Concerned in Understanding Offenders. By William Healy, M.D., A.B., Director of the Psychopathic Institute, Juvenile Court, Chicago. pp. xvi—830. Boston: Little, Brown and Company. 1915.

Many books have been written upon delinquency and the delinquent, but this, so far as we are aware, is the first that has given special emphasis to the individuality of the offender. Herein lies the chief merit of this really monumental piece of work, that delinquency is studied, not as a single type of moral or physical disorder, but rather as a condition which varies with each individual. Dr. Healy has applied to his study the case system, of which much has been heard since its original introduction at the Harvard Law School and later at the Harvard Medical School. By this method one gets forthwith at actual facts in individual lives; this plan has been adopted by Healy with the result that he has produced a book of extreme practical value, embodying facts and not mere theories.

As a pioneer worker and in fact organizer of the juvenile psychopathic institute in Chicago, Dr. Healy has had a peculiar opportunity to apply his principles of research in a vastly important and much neglected field. He has proceeded in a purely objective way and his deductions are tentative, in view of the relatively few intensively studied cases. The subject matter of the book is divided into twenty-seven chapters under two general headings: (1) General Data, and (II) Cases, Types, Causative Factors. In the first section, which he calls Book I, after an introduction presenting the general plan of the research and certain general principles with which broad minded persons must be in substantial agreement, chapters are devoted to Orientations, the Individual, the Mental Bases of Delinquency, three chapters on Working Methods, one on Statistics and two on General Treatment. In this portion of the volume methods, which have multiplied to a somewhat alarming extent of late years, are given in considerable detail, with estimates of the value of various tests. The method of case taking is described in detail and naturally forms an important part of the book from an educational standpoint, since upon a carefully taken history and its proper interpretation must depend the ultimate determination of the case. It is gratifying to those who believe that the psycho-analytic method has been a step in advance, rather than a retrograde movement, to find a very fair statement of the present and possible future value of this means of psychological research. In general, this section of the book will be read with eagerness by students of the subject and teachers, but with a certain regret that it could not have been somewhat more condensed.

The second part of the volume (Book II), comprising about 600 pages, is concerned with the histories of characteristic cases. This portion of the book is altogether excellent and must be read to be fully appreciated. As suggested above, it affords an application of the case method worthy of imitation by all who are desirous of studying social problems by other than the usual rule of thumb method. A valuable appendix to the book is an extensive bibliography on the general subject of delinquency.

Originality is sufficiently unusual in any walk of life, and particularly in the making of books. Dr. Healy, however, has achieved a distinctly new departure in presenting an old and much discussed subject from a wholly new and suggestive point of view. That this book will be a pioneer and the forerunner of others with similar intent, is not to be doubted. The author makes no claim to finality, and simply blazes the trail for others to follow. It is certainly one of the most significant books of the last decade.

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SIR JAMES McGRIGOR, BART., M.D., K.C.B., F.R.S.

Of the eminent surgeons who have served at the head of the British Army Medical Corps few have been more distinguished or have had the fortune to have their activities fall in a more brilliant or critical historic epoch than the Scotsman Sir James McGrigor, who was to Wellington what Larrey was to Napoleon in the great wars of a century ago. Centering as his long career did, about the battle of Waterloo, McGrigor's life is particularly recalled by the recent centennial of that momentous event and has been sketched at length in the *British Medical Journal* of July 25, 1914 and June 12, 1915.

James McGrigor was a highlander, born at Lethendrey in Strathspey, Invernesshire, in 1771, the son of a merchant. He was educated at the grammar school in Aberdeen and at Marischal College, from which he received the degree of M.A. Not wishing to follow his father's occupation he was attracted to the study of medicine, partly through some of his companions, partly through visits to the Royal Infirmary. He studied medicine for three years at Aberdeen and subsequently at Edinburgh and Glasgow, though he did not at that time obtain his degree. In 1793 he became a surgeon in the 88th regiment of Connaught Rangers which, in 1794, was sent to Jersey, an island then occupied by French exiles. In the unhygienic conditions to which they were subjected typhus broke out among the members of his regiment and McGrigor himself survived the disease. Later his regiment was ordered to Flanders, where he took part in the sieges of Bergen-op-Zoon and Nimeguen. Here again typhus was extensively prevalent in the army, and McGrigor acquired such a valuable clinical experience with this disease that later, when it broke out in the concentration camps at Norwich, McGrigor was detailed to eradicate it, an accomplishment which he actually achieved largely by means of fresh air and cleanliness.

McGrigor was next sent with his regiment to the West Indies aboard the frigate *Betsy,* and on arriving at Granada found himself in the midst of an epidemic of dysentery and yellow fever. McGrigor survived both these infections and directed the activities of the medical staff during the subjugation of that island. In 1796 he returned to England, but in 1798 was ordered with his regiment to Bombay and thence to Ceylon. Here he became chief of the medical staff of Bombay and formed the acquaintance of Colonel Wellesley, with whom his associations thenceforth became most intimate and confidential. In 1801 he went as surgeon with an expedition commanded by Sir David Baird to Corsea and, crossing the desert, went down the Nile to Rosetta. On the voyage to Egypt many of the troops aboard were infected with the Guinea worm, and of his experience with this parasite McGrigor subsequently wrote as follows in his autobiography:—

> "The disease is a very extraordinary one, and was new to me when I first met with it, although I was very well stocked with books, having had, I have reason to believe, a larger stock than most surgeons when we went to India. I looked in vain for an account of this loathsome and painful disease; I found mention merely of its name and antiquity, and that the only treatment was to pull it out daily."

At Rosetta, McGrigor assumed the medical superintendence of the army from India. While he was stationed with headquarters at Alexandria the plague broke out in that city but was quickly subdued by McGrigor's efficient activities. On his return to Bombay he was appointed superintendent of local quarantine.

In 1804 McGrigor returned with his regiment to England and there left it after eleven years' service. He now received the degree of M.B. from Marischal College, but instead of settling in private practice immediately became surgeon of the Horse Guards Blue, then stationed at Canterbury. In this position he soon had to face an epidemic of hospital gangrene, which he controlled by removing his patients to new and scrupulously cleanly quarters. Later, at Windsor, McGrigor came under the favorable notice of George III and, happening at this time to have whooping cough, he had the honor to be cared for by the Queen herself. In 1805 he was gazetted deputy inspector, a position which, from its statistical functions, greatly appealed to his methodical Scottish temperament. In this office he instituted important reforms in the recording and preservation of army medical statistics. He writes as follows in his autobiography of the differences between the methods of his predecessors and the new system which he sought to introduce. He was perhaps one of the first to recognize the immense scientific possibilities and value of the medical statistics derivable from a large body of men under disciplinary control and supervision as in an army.

> "The most minute and scrupulous attention was not only exacted in the number of ounces of soap, salt, oatmeal, etc., given to each patient, but an error even in the fractional parts brought down the animadversion of the board, and was frequently the subject of protracted correspondence; while no notice was taken of any new or extraordinary feature of prevailing diseases, no proposition for the trial of new remedies and for the return of reports thereon, nor any injunctions issued to notice post-mortem appearances. In short, nothing with regard to profesional duty in the interests of science was noticed, unless there happened to be an extraordinary mortality in a corps. About this time, and for some time afterwards, the duties of regimental surgeon and assistant-surgeon were chiefly those of clerks, as accountants to the public for their expenditure on each sick man."

McGrigor was assigned to the northern district with headquarters at Beverly, and there undertook an extensive reform, not only of statistics but of the administration of military hospitals. He writes with a tone of genuine modern enlightenment on the importance and function of such hospitals in the organization of an efficient army:—

> "It is not only in the sense of humanity, but in that of a sound policy and real economy, that the state should provide able medical and surgical advice for the soldier when sick or wounded: I look upon it to be an implied part of the compact of citizens with the state, that, whoever enters the service of his country as a soldier to fight its battles, should be provided with the same quality of medical aid, when sick or wounded, which he enjoyed as a citizen. In every large town, whence the great bulk of recruits is drawn, there are public hospitals and dispensaries which, supported by the subscriptions of the rich, are always open to the sick and poor, and to persons of the middle classes; in fact, to those ranks in life from which the soldier comes. The physicians and surgeons of these public institutions are always the ablest men in the profession of medicine. After the enjoyment of such medical aid, the soldier should not, therefore, be consigned to the ignorant and uneducated of the profession; he is clearly entitled to the same quality of medical advice as when he was a citizen, and is not to be put off with a cheap article of a doctor, and with one who could not afford the expense of a regular medical education."

Later McGrigor was transferred to the southwest district, with headquarters at Portsmouth, where he received and dealt with the large numbers of sick and wounded after the battle of Corunna. Typhus again broke out among these troops, but was quickly suppressed by McGrigor through the use of floating hospitals which relieved the congestion of the wards on land.

In 1811 Dr. McGrigor was ordered to Walcheren to succeed Sir John Webb as chief of the medical department there. He was, however, shipwrecked on his way to Flushing, and, returning to England, was sent, in 1812, to Lisbon, to act as chief of the medical staff under Lord Wellington. It was in this Peninsular War that McGrigor now first gained national distinction, as an efficient medical administrator under circumstances of trying difficulty. His professional and administrative genius were particularly tried after the battle of Salamanca and the siege of Badajoz. Indeed, McGrigor was present in every battle in that war, including the last engagement at Toulouse. Napier in his "Peninsular War" bears striking testimony to the efficiency of McGrigor's medical administration.

"During the ten months from the siege of Burgos to the battle of Vittoria the total number of sick and wounded which passed through the hospitals was 95,348. By the unremitting attention of Sir James McGrigor and the medical staff under his orders, the army took the field preparatory to the battle with a sick list under five thousand. For twenty successive days it marched towards the enemy, and, in less than one month after it had defeated him, mustered, within thirty men, as strong as before; and this, too, without reinforcements from England, the ranks having been recruited by convalescents.''

Upon their return to London at the close of the war the friendship between McGrigor and Wellington continued, and as a result of the latter's influence as well as of his own distinguished services McGrigor was knighted and retired on an allowance of £3 a day. The brief period of leisure thus afforded to him McGrigor devoted to attending lectures on anatomy and chemistry.

The return of Napoleon from Elba, however, soon called England again into the field, and McGrigor was summoned from retirement, and on June 13, 1815, appointed director-general of the medical department with the relative rank of major-general. He was present at the battle of Waterloo and directed the medical relief of the allied armies thereafter. Even with the defeat of Napoleon, McGrigor was not permitted again to pass into retirement; for so active and salutary were the reforms and improvements which he instituted in the army medical service that he was retained in his position until 1851. He was held in the highest esteem, not only by Lord Wellington, but by the government, the King, his colleagues, subordinates and patients. In 1831 he was created a baronet and in 1850 was made a K.C.B. He was a Fellow of the Royal Society of London and was thrice elected rector of Marischal College, Aberdeen. During these years he continued his valuable services to the British Army Medical Corps.

''Allusion has already been made to his investigation into the professional equipment of all the medical officers in the army; but no less important was his statistical research into the health and condition of the troops at all the home and colonial stations, the diseases prevalent, and the modes of treatment pursued. Through the reports and returns which he thus received half-yearly from all over the world he collected a mass of materials of the greatest value, bearing upon the health of the army. He found out the average duration of the life of the soldier in different climates, the causes of their diseases, the mortality in various years from cholera, yellow fever, and other maladies, and the effects of new sanitary methods both of prevention and of cure. His name will also ever be honorably associated with the Army Medical Friendly Society for the relief of widows of army medical officers, which he started in 1816, and with the Army Medical Benevolent Society for the benefit of the orphans of medical officers, which he established four years later. He formed, too, at Chatham a Museum of Anatomy and Natural History bearing upon military surgery and the library attached thereto, to which he contributed no fewer than 1500 volumes.''

McGrigor himself was not a voluminous writer, but his medical sketches, memoirs, letters and autobiography are models of concise, yet picturesque, vigor and accuracy in style.

For fifty-seven years Sir James McGrigor devoted his energy and genius to the medical service of his country, a service during which he had had not only the hardships of his profession, but had passed as many battles, dangers and shipwrecks as Othello; yet after this ''life of sturt and strife'' he survived to enjoy six years of peaceful retirement in London, where he finally died on April 2, 1858 ''without pain and almost without disease.'' In his personality he combined the best qualities of the doctor and the soldier.

''In addition to his great ability as an administrator, McGrigor had the qualities of character that command success. Ever straightforward in his dealings, he combined tact and courtesy with firmness in a most unusual degree. From the time of his joining the Connaught Rangers to the very end of his career he was recognized as an officer who could be trusted to do his duty at whatever cost to himself. The confidence of the soldiers in him reminds one of the story of Ambroise Paré's reception by the garrison of Metz, 'Our Ambroise is with us; we shall not die.' From first to last he was on the best of terms with the officers of his own department, and also with those of the combatant branches. It must never be forgotten that he placed foremost in his desires the health of the soldier; that he worked hard to raise the professional and educational status of the army medical officer; and that he showed a true devotion to the scientific aspects of medicine which was admirable in a life so full of departmental worries and absorbing preoccupations.''

* * *

EXACT METHODS IN PSYCHIATRY.

A difficulty in the phychiatric field has been the failure of exact methods of determining the significance of mental states. The coldness which has been manifested toward this branch of medicine by practitioners of scientific bent has been due largely to the fact of the general indefiniteness of the subject. Laboratory methods have been difficult of application and hence in the present phase of medical opinion the whole subject has been regarded as rather outside the pale of orthodox scientific investigation. It is, however, evident that a change is coming in this attitude and that methods, psychological and of other sorts, are being applied with hope of definite and exact results. All that has grown out of the Binet methods for example, is a step in this direction, not to speak of the more disputed analytical methods of investigating mental phenomena which still are on trial. A still further step toward the desired end of exactitude is illustrated by the work which Dr. G. Philip Grabfield has been doing for the past year at the Boston Psychopathic Hospital in connection with the sensory threshold for faradic stimulation in psychopathic subjects. A further communication on this general subject is printed in this issue of the Journal. Although the number of cases as yet studied is too few upon which to base a broad generalization, it can hardly be doubted that considerable significance is to be attached to this graphic method of determining emotional states. Grabfield in general finds that in the psychosis now known as manic-depressive insanity, during the manic phase a normal threshold for faradic stimulation is maintained, whereas in the depressed stage there is almost invariably a pathologically high threshold. If it be finally proved that a high threshold or diminished sensitivity is characteristic of depression as observed in that psychosis, it becomes evident that a somewhat valuable means of diagnosis of an exact nature is at hand. This possibility Grabfield believes to be a fact. He states in one place, "that the differentiation of true depressions of this psychosis (manic depressive) from those of the psychoneurotic group will be made vastly easier by the determination of this threshold is definitely indicated by the evidence which is at present available." Whatever the ultimate significance of this work on faradic stimulation may prove to be, it is certainly a step in the direction of applying scientific methods to the abstruse problems of the mind and as such constitutes a further bond of association between the field of so-called internal medicine and of its closely related subject, psychiatry. If psychiatry is to come into its own, it apparently must ultimately embrace in its field all the branches of medicine from which it now too often appears to be sharply separated. Work such as this of Dr. Grabfield tends to bring this day nearer.

SPECTACLED SOLDIERS.

A question which is now engaging the attention of recruiting officers across the sea is the advisability of allowing men who wear glasses to enlist in the army. Should the United States become involved in this or any other war this problem would be presented to our army and more particularly to the army medical officers. It might indeed assume grave proportions with us on account of the prevalence of visual defects among Americans.

An argument against enlisting such men, which will at once occur to military surgeons and to other physicians who have attended men in prisons or other places where there was a temptation to avoid duties of various kinds, is the ease with which men with glasses may avoid active duty, if they are so inclined, by simply breaking or losing their glasses. Then of course these accidents may actually happen and deprive the army of the recruit's services for a period if the visual defect be of such a degree as to incapacitate him.

Another factor which must be taken into consideration is the severe character of wounds of the orbit in soldiers wearing glasses. This peculiar susceptibility of spectacled men is recognized by the laws of most communities which provide for a harsher penalty for one committing an assault on a man with glasses than on one without. It is also considered hazardous for such a man to play professional baseball, so much so that we find in the two major leagues, employing between three and four hundred players, only one man with glasses and he is regarded as something of a curiosity, being the only one of the sort for a number of years. A projectile striking a pair of spectacles with considerable force would drive the splintered fragments of glass directly into the brain, inflicting an almost necessarily fatal wound. This is not pure hypothesis, for since the present war began we have received frequent reports of severe injuries sustained by officers wearing wrist watches which came into contact with flying pieces of shell or bullets. Even those in the immediate vicinity of soldiers wearing glasses might be endangered by the fragments of glass, just as is the case now with wrist watches.

Of course there will be some applicants for enlistment who will be desirable on account of special knowledge or because they have had experience which fits them for certain departments of the army, even though they are handicapped by some visual defect. Then, too, the exigencies of the situation may become such that disabilities of this kind will have to be waived.

The whole matter will, of course, be decided by the military authorities, but it seems that the opinion of the medical profession, which will undoubtedly be asked, will be against the enlistment of men with glasses on account of the ease with which they may malinger, their liability to become incapacitated by accident to their glasses and the peculiarly severe nature of the wounds which they may sustain.

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A YEAR OF THE EUROPEAN WAR.

The first year of the great European War has come to an end. Already this war has lasted considerably longer than was generally prognosticated at its outbreak; and the prospect of its early termination seems perhaps more remote now than at any time since the beginning of hostilities. From time to time fresh nations have joined the belligerent powers, and it is not certain that still others may not become involved. A year ago today the assault upon Liège was in progress, and on August 7 that city was occupied by the hostile forces. The events which have succeeded during the ensuing year have marked an unprecedented epoch in the world's history, and have been characterized by an intensity of dramatic interest which has appealed to every class and to all races. Biologically, politically and sociologically, as well as in its medical and human aspects, the European War remains for physicians, as for men of every other walk in life, the great outstanding phenomenon of the twentieth century.

During the past year the Journal has endeavored to present to its readers chiefly such aspects of the great conflict as have a professional and scientific interest. Through its special correspondents it has fortunately been able from time to time to record at first hand the experiences of physicians, not only in the various belligerent countries, but in hospitals, ambulance corps, and at the several arenas of the war. It has already been able to publish several original articles based on the actual experience of war surgery and expects to be able to publish more as time proceeds. The Journal will soon have the especial privilege of printing a valuable series of extracts from personal letters of Dr. Richard P. Strong, dealing with his experience in the suppression of the typhus fever epidemic in Serbia, one of the most noteworthy achievements to the credit of the American medical profession during the war.

As the European War continues, its interest and importance increase rather than diminish; for not only are its events of a stupendous and colossal magnitude, but its settlement is fraught with momentous consequences which will profoundly affect the future aspect of civilization throughout the world. As a scientific periodical, the Journal has remained and will continue dispassionately neutral in its view of the phenomena of the war, and until the conclusion of the conflict will endeavor to present in due proportion in its columns those events which have a particularly medical bearing. In the present issue, grouped for the first time under a special heading, are several topics of particular concern: the withdrawal of American Red Cross aid, the establishment of an American relief hospital at Florence, the award of a decoration for heroism to an American physician. To the physician, perhaps more than to men of any other profession, nothing human is alien; and not only does our profession play a large and critical part in the actual events of war, but it is likely to have an even more prominent rôle in the racial reconstruction which must follow.

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MEDICAL NOTES.

New York Babies Do Well Despite the Heat.—According to figures compiled by Registrar W. H. Guilfoy, of the Department of Health, there were 1299 deaths reported during the past week, with a rate of 11.67 per thousand of the population, as compared with 1331 deaths and a rate of 12.44 during the corresponding week of 1914, a decrease in the absolute number of deaths of 32, and a decrease in the rate of 0.77 of a point, which is equivalent to a relative decrease of 86 deaths.

The mortality from diarrheal diseases under five years of age, notwithstanding the extremely hot weather of the week ending July 17, 1914 (diarrheal death rate ordinarily increases after the third day of extremely hot weather), showed the decreased mortality of approximately 8%.

The number of deaths from heat stroke was nine, one more than the number in 1914.

Tuberculosis and accidental deaths were the only other causes that showed an increased mortality.

The mortality from typhoid fever was 60% lower than in 1914.

The Borough of the Bronx showed the extremely low rate of 7.83 per 1000 from all causes.

The death-rate from the first of January, up to and including Saturday, July 24, was 13.86 per 1000 of the population, as compared with a rate of 14.37 during the corresponding period of 1914.

Book Agent Claims to be Health Department Nurse.—Commissioner Goldwater lately sent out a warning to New Yorkers to be on the lookout for a wily woman book agent who secures her introduction into homes where there is a case of contagious disease by representing herself to be from the Department of Health. In an instance reported in Brooklyn, the mother of a child ill with measles was visited by a woman who said she came from the Board of Health and had received word of the case and that she had called to tell how to treat such cases. Under the belief that this woman was from the Health Department and that the publication she represented was sanctioned by it, the mother was induced to sign her name to a blank and pay one dollar down. After a while, she began to realize that she was buying a book on health and longevity, which was to be paid for twenty-five cents a week for many months, and thereupon demanded her money back, which was refused, the woman departing saying that the book would be sent the following Monday. The receipt she left tells of a book on health through which people are taught how to get along without doctors, by treating their own families according to the prescriptions therein. The book is to cost twelve dollars, and there is no address on the blank.

Almost needless to say, the Department of Health is not promoting the sale of any particular book on health. On the contrary, it is glad to send, free of charge to all who ask, carefully written circulars of information regarding almost all matters of public health, including, of course, special leaflets on the various contagious diseases.

Honan Biological Institute.—It is announced in a recent issue of the *British Medical Journal* that the new building of the Honan Biological Institute at Queens College, Cork, Ireland, has recently been completed with funds provided by the trustees of the estate of the donor.

"In the new buiding ample room has been provided for the study of zoölogy, botany and geology. There are junior and senior zoölogical and botanical laboratories, as well as research rooms, geological and geographical laboratories, and a large semicircular lecture theater, lighted from the roof, and capable of accommodating about 100 students."

University of Cincinnati Medical College.—It is announced in a recent issue of *Science* that during the past month the Medical College of the University of Cincinnati has received several large gifts.

"Mrs. Mary M. Emery promised the university the sum of $250,000 for a new Medical College building, on the condition that an additional $250,000 be raised by July 1 for its equipment and maintenance. At the appointed time, Dean C. R. Holmes, of the College of Medicine, announced that $250,000 had been secured. The new structure will be located on grounds adjacent to those of the Cincinnati General Hospital, which occupies 24 buildings and covers 27 acres, and which offers unusual opportunities for clinical instruction. The sum of $30,000 has just been raised by citizens of Cincinnati for the purpose of maintaining for three years a chair of medicine in the Medical College. The chair will be known as the Frederick Forchheimer chair of medicine, in honor of the late Dr. Frederick Forchheimer, who was for years professor of medicine at the Medical College. Dr. Robert S. Morris, lately of Clifton Springs, New York, and formerly of Ann Arbor and of Johns Hopkins University, has been appointed to the new position."

The Development of Tropical Countries.—In an address delivered in Cincinnati, General William C. Gorgas made the following pertinent remarks regarding the effect of improved sanitation in tropical countries on their industrial development:—

"The real scope of tropical sanitation which has been almost entirely developed within the last fifteen or twenty years, I believe, will extend far beyond our work at Panama. Everywhere in the tropics, to which the United States has gone in the past fifteen years, it has been shown that the white man can live and exist in good health. This has occurred in the Philippines, in Cuba and in Panama, but the demonstration has been most prominent and spectacular at Panama, and therefore has attracted there the greatest world-wide attention. Here among our large force of laborers we had for ten years some ten thousand Americans, men, women and children. Most of these American men did hard manual labor, exposed to the sun, rain and weather conditions day in and day out, yet during that time their health remained perfectly good, just as good as if they were working at home. The same remark as to health would apply to the four thousand women and children who lived at Panama with their husbands and fathers. Both the women and children remained in as good condition as they would have been had they lived in the United States. This condition at Panama, I think, will be generally received as a demonstration that the white man can live and thrive in the tropics. The amount of wealth which can be produced in the tropics for a given amount of labor is so much larger than that which can be produced in the temperate zone by the same amount of labor that the attraction for the white man to emigrate to the tropics will be very great, when it is appreciated that he can be made safe as to his health conditions at a small expense. When the great valleys of the Amazon and of the Congo are occupied by a white population more food will be produced in these regions than is now produced in all the rest of the inhabited world."

EUROPEAN WAR NOTES.

Typhus in Serbia Under Control.—On July 22 it was reported by the American Vice Consul at Belgrade that the epidemic of typhus fever at Serbia and Montenegro is now under complete control. It is added that the cost of continuing the control of pestilential diseases in Serbia during the next two months is estimated at $10,000.

Withdrawal of Red Cross from Europe.—Report from Washington, D. C., on July 25 announces that on October 1 the American Red Cross will withdraw 14 of its units from the various belligerent countries, leaving only the two units in Belgium, where it is believed that the need for them is greatest. This withdrawal is made necessary by lack of sufficient funds to maintain the units at their present stations. The Serbian sanitary commission, however, whose support has been provided for by special contribution, will continue its work. A statement has recently been issued by Miss Mabel T. Boardman, chairman of the American Red Cross Relief Committee, showing the exact amount and kind of relief sent to the various countries:—

"The Red Cross sent to the warring countries 367 persons engaged in humanitarian enterprises. Of that number 71 were surgeons and 253 nurses, while 43 were members of the Serbian sanitary commission. England, France, Russia, Germany, Austro-Hungary, Serbia and Belgium each received one or more units, which means one or more complete hospitals, with doctors, nurses and other attendants, and with all necessary supplies and equipment. The administrative expenses of the huge undertaking have already amounted to $11,291, and this has been paid by the Red Cross itself and not taken from the fund contributed for relief.

"The report shows that the Red Cross has sent into the war zone almost 1,000,000 pounds of cotton for the hospitals, 882,000 yards of surgical gauze, 65,000 yards of crinoline, 727,000 assorted bandages, 33,000 yards of adhesive plaster, 9240 stretchers, 10,267 blankets, and other supplies in proportion and 19 motor ambulances for the Red Cross personnel. There were also four army field hospital outfits, 50 army hospital tents and 30 field medical tents.

"Following is a summary of services rendered each belligerent government—

"Austria, 11 shipments, value $97,683; Belgium, 12 shipments, $96,708; England, 13 shipments, $87,843; France, 24 shipments, $216,155; Germany, eight shipments, value $182,795; Italy, two shipments, $14,451; Montenegro, three shipments, $15,326; Poland, one shipment, $7200; Russia, nine shipments, $89,613; Serbia, eight shipments, $130,867; Turkey, two shipments, $12,536.

"The financial statement shows expenditures of $1,450,306, leaving a balance of $174,818 on hand, for which the demands already are heavy."

Organization of American Committee for Relief Work for Italian Wounded.—The following announcement has been made relative to the organization of an American committee for war relief in Florence:—

"Upon the intervention of Italy in the European War, a meeting of Americans resident in Florence was convened to institute and organize relief work for the Italian wounded. At this meeting it was unanimously resolved to equip and maintain a hospital for convalescent private soldiers discharged from the military hospitals, but not yet able either to rejoin the colors or to return to their homes. To this end a general committee was appointed, with the title American Committee for War Relief in Florence.

"Upon application to the authorities of the Italian Red Cross the committee was most courteously offered the use of the commodious and historic Villa del Sole di Camerata, previously placed at the disposal of the Red Cross by its owner, Cav. Dott. E. Modigliani. With ample capacity for one hundred hospital beds, surrounded by a spacious park and garden, and furnished with modern appliances for heating, lighting and sanitation, the Villa Modigliani is admirably adapted for our purpose. Properly equipped and maintained as a hospital, it will be an offering to the Italian people, in the hour of stress, worthy of the sincere and grateful friendship borne them by Americans who have loved their country and its past, and look with confidence toward its future. All expenses of equipment and maintenance will be met and financed by the American committee.

"The medical staff will be appointed by the Italian Red Cross, with the coöperation of the American committee, which will further charge itself with such functions as may be delegated to it by the medical authority.

"The resources of the American colony in Florence are insufficient for the maintenance of the hospital upon a scale commensurate with the opportunity and the need. Its members hope, therefore, to enlist the interest and financial coöperation of their fellow-countrymen who have known something of the beauty and inspiration of a city which has contributed so generously to the ideal life of our civilization.

"The initial expense of equipment for one hundred beds is estimated at four thousand dollars; the monthly expense of maintenance at the same sum. The cost of this hospital for one year, upon this basis, will, therefore, be not less than fifty thousand dollars. Toward this sum more than twenty thousand dollars have been pledged, by Americans resident in Florence, chiefly in monthly subscriptions.

"The committee looks confidently to the larger American public for their sympathy and coöperation. It is hoped that a sum will be subscribed sufficient to enable the hospital to receive and care for as many patients as the space at our disposal may warrant.

"Checks should be drawn and sent with the detachable form, duly filled in, to H. Blakiston Wilkins, Treasurer, 4 Via Bernardo Rucellai, Florence. American checks may be sent to H. Blakiston Wilkins, treasurer, care of Bankers Trust Company, Wall Street, New York."

Second Harvard Surgical Unit.—Report from Europe on July 28 states that the second Harvard Surgical Unit, which sailed from New York City on June 26, is now at service in charge of a British base hospital of 1000 beds in France, the exact location being deleted by the censor. The unit is under official chief command of Lieutenant-Colonel Sir Allan Perry, R.N.M.C. Dr. E. H. Nichols, the surgeon-in-chief of the unit will return to the United States about September 1. On Saturday, July 31, there sailed from New York aboard the steamship *Philadelphia* for England, whence they will proceed to France, Dr. Edward P. Richardson, Dr. Channing C. Simmons and Dr. Donald B. Sternburg of the Massachusetts General Hospital. It is expected that this party will arrive in France about August 10.

Typhus Fever in Europe.—The weekly report of the United States Public Health Service for July 23, 1915, notes that during the fortnight ended June 5, twenty-three cases of typhus fever in the military service were reported in Germany. During the same period the disease was reported present among prisoners of war in Baden, Saxe-Coburg-Gotha and in seventeen German government districts. During the week ended June 10, twenty-three cases and seven deaths of the disease were reported in Alexandria, Egypt. During the fortnight ended May 8, 645 cases were reported in Austria, chiefly among soldiers of war and persons from Galicia.

French Government Honors Cambridge Physician.—It is announced that Dr. Richard Norton, of Cambridge, Mass., has been awarded the decoration of the "croix de guerre" by the French government for great gallantry in rescuing a number of wounded during the evacuation of a village within 600 yards of the hostile lines and under heavy fire, in which he "avec un sangfroid et un phlegme de merveilleux a eu ses voitures percés de projectiles." Dr. Norton has been serving since August, 1914, in command of a British corps of 80 motor ambulances in Flanders.

War Relief Funds.—On Aug. 1 the totals of the three principal New England relief funds for the European War reached the following amounts:—

Belgian Fund	$266,442.37
Red Cross Fund	137,647.75
Serbian Fund	35,845.55

BOSTON AND NEW ENGLAND.

Gift to Harvard for Medical Research.—It is announced that Mr. Douglas Flattery of Boston has presented to the president and fellows of Harvard College a fund of which the annual income will be about $800 for the encouragement of scientific study of the cause, cure and prevention of disease. The terms in which this gift is made are as follows:

"I am prompted to this gift by the belief that much knowledge of those diseases of which the cause and treatment are at present wholly or in part unknown will be acquired in the future through the persistent study of those diseases by skilful and industrious workers, who may be able to devote their whole time for a given period to such study. It is my hope that the income of this fund will enable and encourage both young men of marked promise and investigators of brilliant achievement to pursue those scientific studies in the fields of medical or surgical research for which they are highly qualified, or show special adaptability.

"The income is annually to be assigned by vote of the president and fellows of Harvard College, unless in their wisdom and unrestricted authority the purpose of this gift could best be served by withholding the income for any year or any term of years, but I would prefer an annual appointment, for not more than three years.

"In expressing my hope for the disposition of the income of this fund, I do not wish to impose any restrictions upon the authority of the president and fellows of Harvard College other than that the income be for all time devoted to the promotion of the scientific study of the cause, the cure and the prevention of disease.

"If, in your judgment, the amount is insufficient to get the results desired I am willing to consider the advisability of increasing the capital now or in the future."

New Plymouth Hospital.—The new building of the Plymouth (Mass.) Hospital was dedicated on Thursday of last week, July 22. The money for this building and a sum for its endowment were given by Mrs. Rosa Cole of Kingston, Mass. The cost of the building was $100,000. There is a general surgical and a medical ward, an isolation ward, boiler room and laundry. The old building is now used for administration and the two are connected by a passageway. The new building is equipped with silent electric signals, electric elevators and a German system of indirect lighting.

Massachusetts Department of Hygiene.—In the issue of the Journal for June 3d we noted the appointment of Professor Selskar M. Gunn as chief of the newly-established division of hygiene of the Massachusetts Department of Health. This division has recently issued a statement regarding measles, for distribution over the state, calling attention to its dangers, prevalence and the necessity of careful nursing during the course of the disease. Professor Gunn states that about five hundred babies die each year in this state from measles, and a large number of other deaths, charged to bronchial pneumonia, are primarily due to measles. In January there were 1118 cases. The number steadily increased until the returns for the month of May showed 4809 cases. Practically all the fatal cases of measles in this state are children under six years of age. The division has in preparation the publication of a book on the baby for mothers and a traveling exhibit on child welfare. Films showing educational pictures about such topics as the milk supply and typhoid fever will be furnished various moving picture theatres. Educative work in co-operation with the American Society for the Control of Cancer is also being prepared.

Care of Hospital Records.—The Massachusetts General Hospital has published in the form of a pamphlet a complete statement of its system of caring for hospital records. It describes minutely the exact routine followed,—the admission of a patient, the writing of the record, directions for work on records, duties of the custodian, daily inspection of charts, weekly inspection of records, name and result catalogue, follow-up work, the clinical catalogue and the ultimate binding of the record. For the purpose of standardizing the methods of keeping hospital records this statement will be valuable.

Cost of the Epizoötic of Foot and Mouth Disease.—It is announced by the Massachusetts Bureau of Animal Industry that no case of foot and mouth disease has been reported in this state since April 17. Forty-nine cities and towns and ninety-seven farms were involved in the epizoötic of this disease last winter as a result of which there were slaughtered 6116 infected swine, 2114 cattle, 1697 fowl, 77 sheep and 11 goats. The value of these animals was appraised at $230,994.38 for which the owners are reimbursed by the state and nation, each of which meets one-half of the expense. The total cost met by the Commonwealth of Massachusetts, therefore, amounts to $115,472.19. The majority of these payments have already been made.

Massachusetts Association of Boards of Health.—A quarterly meeting of the Massachusetts Association of Boards of Health was held at the Pemberton Inn, Hull, on Thursday afternoon of last week, July 29. Dr. Elliot Washburn, superintendent of the Rutland Sanatorium, read a paper by the late Chester Bryant, an agent of the Haverhill Board of Health, on "The Incorrigible Consumptive." The second paper of the afternoon was by Dr. Francis G. Curtis, chairman of the Newton Board of Health, on "Some Inconsistencies in Dealing with Tuberculosis."

The Dentists' Dilemma.—In the issue of the Journal for July 22, we noted the complication arising as a result of the enactment of the new dental registration law in this Commonwealth. As a result another meeting of the registration board was held on July 27, at which the additional examination required was taken by one hundred, of the two hundred and one candidates previously rejected. Of these, ninety-three were passed.

Massachusetts Medical Society.

Franklin and Hampshire District Societies.—Wednesday, July 14, Franklin-Hampshire District Societies had a combined meeting and outing at South Deerfield. Little Franklin's baseball men scored a 10—5 victory over Hampshire on a field at the base of beautiful Mt. Sugar Loaf. Superintendent Dr. Charles E. Perry of the County Tuberculosis Hospital at Northampton read a paper covering the field and service of such hospitals and advocating a larger hospital unit on account of the expense. The state law relating to the establishment of sanatoria in towns of 10,000 or more population appears to work a hardship in this rural section. In the discussion which followed the following participated: Dr. J. E. Urquhart of Ashfield, president of the Franklin Society; Dr. H. G. Stetson, Dr. C. C. Messer, Dr. G. P. Twitchell, Dr. N. P. Wood, Dr. Charles Moline, and Dr. P. W. Goldsbury of Franklin; Dr. C. T. Cobb of Easthampton, president of the Hampshire Society; Dr. Christopher Seymour, Dr. J. G. Hanson, Dr. F. H. Smith, Mr. Clarence Hodgkins, chairman, and Mr. Frank E. Brooks of the County Commissioners of Hampshire County. Dr. N. P. Wood of Northfield moved that a committee be appointed including the presidents of both Societies to see what could be done to the effect that the hospital for Hampshire County might serve Franklin County as well, and the motion was carried. About fifty sat down to an excellent dinner at the Warren Hotel.

P. W. Goldsbury, M.D.

Miscellany.

THE MILK INDUSTRY.

REPORT OF THE BOSTON CHAMBER OF COMMERCE COMMITTEES.

THE medical profession will be interested in the report of the Committee of the Boston Chamber of Commerce which, as noted in these columns last July, has made an exhaustive survey of the milk industry in New England during the past year. The committee was composed of the following persons: John P. Bowditch, George H. Ellis, John C. Runkle, and Walter E. Smith, and it has had the assistance of several specialists. Sixteen hearings have been held in all the New England states, attended by 2500 farmers, representing between 70 and 80 per cent. of the milk-producing towns. These are the six recommendations made in the report:

1. The establishment of a standardized system of milk grading and labelling for all New England.

2. The establishment of country milk stations by producers in co-operation with local business men and railroads, where milk may be graded and processed and the surplus utilized in the manufacture of butter and cheese.

3. Bookkeeping by farmers for keeping accurate records of production costs and economizing farm operations. A co-operative arrangement is suggested.

4. Reform of present methods of railroad transportation, abolishing the leased car system and establishing uniform per-can rate.

5. Improvement of city distribution. Adoption of the ticket system, cost accounting methods, and the study of common problems by dealers in a co-operative organization.

6. Advertisement of the food value of milk and milk products, thus adding to the other improvements in marketing the important factor of publicity.

As regards the "ticket system" referred to in the fifth recomendation it may be said that the cost of delivery to the family might be reduced by use of the ticket system which has worked successfully in the West and in some cities of New England. The consumer pays $1 or less for tickets, which he puts out each day in the empty bottles for the amount of milk and cream he wishes. This assures the dealer his money in advance, prevents loss by bad bills, and secures the return of bottles. This ticket system will enable the price of milk to the consumer to be raised or lowered in fractions of a cent.

A perusal of the full report by every physician will be time well spent.

Correspondence.

LOBAR PNEUMONIA.

WESTPORT, NEW YORK, July 29, 1915.

Mr. Editor: In Dr. Frederick T. Lord's article, July 29, 1915, page 154, I find the following: "In consideration of the development of pneumococci only at body temperature and their short viability outside the body, *contagion* must be regarded as the method of spread." This statement prompts me to affirm again, what I thoroughly believe, that for all patients, either imminently threatened with pneumonia, or already suffering from it, it is all important, whenever practicable, to have beechwood creasote, constantly vaporised in the sick room.

This may be readily done with the ordinary croup kettle filled with boiling water, to which a small quantity of creasote is added, as required.

Whether, or not, creasote, or creasotal, should be prescribed internally, is questionable.

In hospital wards, the reason, almost of necessity, we have increased mortality is because treatment with creasote inhalations cannot be properly carried out. In hospital private rooms, it is, of course, different. I have tried many methods of treatment in pneumonia, but have never seen any so efficacious as the one I recommend.

BEVERLEY ROBINSON, M.D.

BELGIAN PHYSICIANS' RELIEF FUND.

FOR THE WEEK ENDING JULY 24, 1915.

CONTRIBUTIONS.

Dr. Charles N. Dowd, New York		$ 2500
Dr. Emil Lofgren, Rockford, Ill.		5.00
Columbia Medical Society, Columbia, S. C.		20.00
Receipts for the week ending July 24		$ 50.00
Previously reported receipts		7700.84
Total receipts		$7750.84
Previously reported receipts:		
1625 standard boxes of food @ $2.20	$3575.00	
1274 standard boxes of food @ $2.30	2930.20	
353 standard boxes of food @ $2.28	804.84	
Total disbursements		$7310.04
Balance		$440.80

F. F. SIMPSON, M.D., *Treasurer*,
7048 Jenkins Arcade Bldg.,
Pittsburg, Pa.

MEDICAL BROTHERHOOD FOR THE FURTHERANCE OF INTERNATIONAL MORALITY.

In last week's issue of the JOURNAL we noted the appeal and plan of Dr. S. J. Meltzer of New York for the formation of a medical brotherhood for the furtherance of international morality. It is announced that this organization has now been effected and the following are announced as its officers:

EXECUTIVE COMMITTEE.

Residents of the City of New York.

President, Dr. S. J. Meltzer, Member, Rockefeller Institute.

First Vice-President, Dr. Rufus Cole, Director, Rockefeller Hospital.

Second Vice-President, Dr. S. Josephine Baker, Director, Dept. of Child Hygiene.

First Secretary, Dr. Wm. J. Gies, Professor of Biological Chemistry, Columbia University.

Second Secretary, Dr. Harlow Brooks, Professor of Clinical Medicine.

Treasurer, Dr. Robert T. Morris, Professor of Surgery, Post-Graduate Medical School.

Council.

Dr. Abraham Jacobi.

Dr. Robert Abbe, Surgeon to St. Luke's Hospital.

Dr. John Winters Brannan, President, Medical Board, Bellevue Hospital.

Dr. J. A. Fordyce, Professor of Dermatology, College of Physicians and Surgeons.

Dr. Nellis B. Foster, Assistant Professor of Medicine, Cornell University Medical School.

Dr. S. S. Goldwater, Commissioner, Dept. of Health.

Dr. Graham Lusk, Professor of Physiology, Cornell University, Medical School.

Dr. William H. Parke, Professor of Bacteriology, Univ. and Bell. Medical College.

Dr. John Allen Wyeth, President, New York Polyclinic.

Honorary Residents.

Dr. Russell H. Chittenden, Director, Sheffield Scientific School, Yale University, New Haven.

Dr. W. T. Councilman, Professor of Pathology, Harvard Medical School, Boston.

Dr. W. C. Gorgas, Surgeon-General of the Army, Washington, D. C.

Dr. W. S. Halsted, Professor of Surgery, Johns Hopkins Medical School, Baltimore.

Dr. W. H. Howell, Professor of Physiology, Johns Hopkins Medical School, Baltimore.

Dr. Abraham Jacobi.

Dr. W. W. Keen, President, International Surgical Congress; President, American Philosophical Society, Philadelphia.

Dr. Edward L. Trudeau, Saranac Lake, New York.

Dr. James Tyson, Professor of Medicine, Emeritus, University of Pennsylvania, Philadelphia.

Dr. Victor C. Vaughan, Professor of Hygiene and Physiological Chemistry, Ann Arbor.

Dr. William H. Welch, President, National Academy of Sciences; Professor of Pathology, Johns Hopkins Medical School, Baltimore.

Honorary Vice-Presidents.

Dr. J. J. Abel, Professor of Pharmacology, Johns Hopkins Medical School, Baltimore.

Dr. Herman M. Biggs, Commissioner, State Board of Health, New York City.

Dr. Frank Billings, Dean, Rush Medical College, Chicago.

Dr. Clarence John Blake, Professor of Otology, Emeritus, Harvard Medical School, Boston.

Dr. W. B. Cannon, Professor of Physiology, Harvard Medical School, Boston.

Dr. W. H. Carmalt, Professor of Surgery, Emeritus, Yale University Medical School, New Haven.

Dr. George Dock, Professor of Medicine, Washington University, Medical School, St. Louis.

Dr. James Ewing, Professor of Pathology, Cornell University Medical School, New York City.

Dr. Alice Hamilton, Expert on Occupational Diseases, Federal Bureau of Labor Statistics, Washington.

Dr. L. Hektoen, Professor of Pathology, Rush Medical College, Chicago.

Dr. Howard A. Kelly, Professor of Gynecology, Johns Hopkins Medical School, Baltimore.

Dr. Robert G. LeConte, President, American Surgical Association, Philadelphia.

Dr. Rudolph Matas, Professor of Surgery, Tulane University, New Orleans.

Dr. William J. Mayo, Rochester, Minnesota.

Dr. Charles K. Mills, Professor of Neurology, University of Pennsylvania, Philadelphia.

Dr. John B. Murphy, Professor of Surgery, Northwestern Medical School, Chicago.

Dr. E. L. Opie, Professor of Pathology, Dean, Washington University Medical School, St. Louis.

Dr. Charles A. Powers, Professor of Clinical Surgery, Emeritus, University of Colorado, Denver.

Dr. W. L. Rodman, President, American Medical Association, Philadelphia.

Dr. G. E. deSchweinitz, Professor of Ophthalmology, University of Pennsylvania, Philadelphia.

Dr. Henry Sewall, President, Association of American Physicians, Denver.

Dr. F. C. Shattuck, Professor of Medicine, Emeritus, Harvard Medical School, Boston.

Advisory Committee, 102 Members.

Medical readers of the above are requested, if they are so inclined, to enroll as members. There is no membership fee. But voluntary contributions for the purpose of upholding the organization, distribution of literature, etc., will be gratefully accepted. Enrollment and contributions are to be sent to the Medical Brotherhood in care of

S. J. Meltzer, M.D.,
13 West 121st Street,
New York City.

APPOINTMENTS.

Montefiore Home.—*Dr. Benjamin S. Klein* of the Rockefeller Institute for Medical Research has been appointed resident pathologist of the Montefiore Home for Chronic Invalids in New York.

New York Post-Graduate Medical School.—*Dr. Ward J. MacNeal* has been appointed director of laboratories at the New York Post-Graduate School and Hospital to succeed Dr. Jonathan Wright who has resigned. *Dr. Morris Fine* has been appointed adjunct professor of pathologic chemistry and *Dr. Richard M. Taylor* adjunct professor of pathology.

United States Public Health Service.—*Dr. M. Sullivan* has been appointed biochemist in the United States Public Health Service to engage in the study of pellagra at the Pellagra Hospital in Spartanburg, S. C.

RECENT DEATHS.

Dr. Edward Bedloe who died on July 24 at Philadelphia was born in 1848. Though educated as a physician and dentist he never engaged in practice but devoted his life to the United States Consular Service, having served as consul at Verona, Italy; Alexandria and Cairo, Egypt; and Amoy, China.

Dr. Charles Harvey Shattuck who died on July 26 in Malden, Mass., was born at Quechee, Vt., in 1863. He received the degree of M.D. from Dartmouth Medical School in 1881 and practised first at Ballardvale and later at Andover, Mass. He removed to Everett, Mass., in 1902 but lately had resided at Malden. He is survived by his widow, two daughters and three sons, one of the latter a praticing dentist in Everett.

Dr. Charles F. P. Burchmore, of Boston, who died on July 27 at Winthrop, Mass., was born in 1864. He received the degree of M.D. in 1893 from the Baltimore College of Physicians and Surgeons, and was a member of the Massachusetts Eclectic Medical Society. He is survived by his widow.